

| Set | Items | Description |
|--------------------------------------|-------|----------------------------------|
| ? s (colloidal(w)Se(O)) and nano? | | |
| | 20012 | COLLOIDAL |
| | 0 | SE(O) |
| | 0 | COLLOIDAL(W)SE(O) |
| | 60803 | NANO? |
| S1 | 0 | (COLLOIDAL(W)SE(O)) AND NANO? |
| ? s (colloidal(w)selenium) and nano? | | |
| | 20012 | COLLOIDAL |
| | 3 | SELENIUM |
| | 0 | COLLOIDAL(W)SELENIUM |
| | 60803 | NANO? |
| S2 | 0 | (COLLOIDAL(W)SELENIUM) AND NANO? |
| ? s (colloidal(w)selenium) and nano? | | |
| | 20012 | COLLOIDAL |
| | 36850 | SELENIUM |
| | 12 | COLLOIDAL(W)SELENIUM |
| | 60803 | NANO? |
| S3 | 0 | (COLLOIDAL(W)SELENIUM) AND NANO? |
| ? s((colloid?(w)selenium) | | |
| >>>Unmatched parentheses | | |
| ? s((colloid?(w)selenium) | | |
| >>>Unmatched parentheses | | |
| ? s colloid?(w)selenium | | |
| | 45791 | COLLOID? |
| | 36850 | SELENIUM |
| S4 | 26 | COLLOID?(W)SELENIUM |
| ? t s4/7/1-26 | | |

4/7/1 (Item 1 from file: 5)
 DIALOG(R)File 5:Biosis Previews(R)
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0014409176 BIOSIS NO.: 200300367895

Colloidal ***Selenium*** Generated by Photobleaching of
 Selenomercyanine Dyes Combines with Serum Macromolecules To Form
 Conjugates That Are Preferentially Cytotoxic to Leukemia and Selected
 Solid Tumor Cells.

AUTHOR: Sieber Fritz (Reprint); Daziano Jean-Pierre (Reprint); Anderson
 Gregory S (Reprint); Miyagi Kiyoko (Reprint); Sampson Reynee W (Reprint);
 Tsujino Ichiro (Reprint); Gunther Wolfgang H (Reprint); Krieg Marianne
 (Reprint); Bousbaa Jamal (Reprint); Forsterling Frank H (Reprint)

AUTHOR ADDRESS: Pediatrics, Medical College of Wisconsin, Milwaukee, WI,
 USA**USA

JOURNAL: Blood 100 (11): pAbstract No. 4411 November 16, 2002 2002

MEDIUM: print

CONFERENCE/MEETING: 44th Annual Meeting of the American Society of
 Hematology Philadelphia, PA, USA December 06-10, 2002; 20021206

SPONSOR: American Society of Hematology

ISSN: 0006-4971

DOCUMENT TYPE: Meeting; Meeting Abstract; Meeting Poster

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Selenium (Se) is an essential trace mineral. Dietary Se
 deficiency has been linked to Keshan Disease and an increased incidence
 of cancer and cardiovascular disease. Se compounds have been used in
 preclinical models and, to a limited extent in the clinic, for the
 treatment of cancer. All biological activities of Se have been attributed
 to ionized or organic Se, i.e. Se in oxidation states -II, +II, +IV, or
 +VI. Elemental Se (Se in oxidation state 0) has been considered
 biologically inert. We report here that Se(0) generated by the singlet
 oxygen-mediated photobleaching of selenomercyanine photosensitizers
 combines with certain serum macromolecules (notably albumin and
 lipoproteins) to form conjugates that are selectively cytotoxic for
 leukemia and selected solid tumor cells. For example, a 1-hour exposure
 to an 8- μ M solution of Se-conjugates is sufficient to eliminate 5 log of
 in vitro clonogenic L1210/L-PAM2 leukemia cells while preserving all
 normal granulocyte/macrophage progenitors and CD34-positive cells. In
 some preclinical models, Se-conjugates synergistically potentiate the

anti-tumor effect of ionizing radiation and alkylating agents. In order to express their cytotoxic potential, Se-conjugates need to be internalized by an endocytotic process that is inhibited by low temperature, cytochalasin B, and excess native carrier protein. However, the protein and lipoprotein content of whole blood is not sufficient to block the selective uptake of conjugates by leukemia cells. Internalization of Se-conjugates is followed by a rapid and massive (up to 80%) drop of intracellular glutathione, a loss of mitochondrial transmembrane potential, and the activation of caspases. Se conjugates that are derived from merocyanines with a S or Se atom in the donor heterocycle are green-fluorescent due to the binding of a chromophore photoproduct to the carrier molecule. The fluorescent label allows easy analysis of the binding/uptake and distribution of Se-conjugates by flow cytometry. Our results demonstrate that photoproducts can contribute substantially to the cytotoxic action of photodynamic therapy. They offer a plausible explanation for the reduced cytotoxic activity of selone photosensitizers at low temperatures, and they question the widely held view that Se (0) is inert. Compounds modeled after our Se-conjugates may prove useful for the local or systemic therapy of cancer.

4/7/2 (Item 2 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0014265766 BIOSIS NO.: 200300224485
Proteinated subnanoparticles of ***colloidal*** ***selenium***: A new class of anti-leukemia/lymphoma agents..
AUTHOR: Sieber F (Reprint)
AUTHOR ADDRESS: Medical College of Wisconsin, Milwaukee, WI, USA**USA
JOURNAL: Leukemia (Basingstoke) 17 (3): p683 March 2003 2003
MEDIUM: print
CONFERENCE/MEETING: 5th International Symposium on Leukemia and Lymphoma Amsterdam, Netherlands March 12-15, 2003; 20030312
ISSN: 0887-6924 (ISSN print)
DOCUMENT TYPE: Meeting; Meeting Abstract
RECORD TYPE: Citation
LANGUAGE: English

4/7/3 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0009656609 BIOSIS NO.: 199598124442
A diagnostic dipstick for rotavirus in faeces: The use of ***colloidal*** ***selenium*** as marker
AUTHOR: Fernandez Daisy (Reprint); Miranda Alina (Reprint); Falcon Viviana; Sorell Luis; Frias Maria T
AUTHOR ADDRESS: Div. Immunotechnol. Diagn., Cent. Genet. Eng. Biotechnol., PO Box 6162, Havana 6, Cuba**Cuba
JOURNAL: Biotecnologia Aplicada 10 (3): p217-221 1993 1993
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Rotavirus is known to be the most common cause of severe diarrhea in infants and young children, each year leading to an estimated 800 000-900 000 deaths. Rotavirus also infects bovines and other species, with high morbidity and mortality. We have developed a fast and simple naked-eye dipstick system to detect human and bovine rotavirus in faeces, using nitrocellulose as solid phase, two monoclonal antibodies, and ***colloidal*** ***selenium*** as marker. The system is able to detect 10⁻⁴ viral particles (v.p.; 1-2 ng)/g of faeces. When compared with a commercial latex system, the specificity and sensitivity of the test for human rotavirus were 100%. The test was superior than an ELISA prepared with the same monoclonal antibodies. For bovine rotavirus the specificity and sensitivity of the test were also 100%, in comparison with RNA-polyacrylamide gel electrophoresis.

4/7/4 (Item 4 from file: 5)
DIALOG(R)File 5:BIOSIS Previews(R)
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0008859897 BIOSIS NO.: 199396024313
One-step competitive immunochromatographic assay for semiquantitative
determination of lipoprotein (a) in plasma
AUTHOR: Lou Sheng C; Patel Chandu; Ching Shanfun; Gordon Julian
AUTHOR ADDRESS: Abbott Diagnostics Div., Abbott Lab., North Chicago, IL
60064-3500, USA**USA
JOURNAL: Clinical Chemistry 39 (4): p619-624 1993
ISSN: 0009-9147
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Numerous studies have associated high concentrations of
lipoprotein(a) (Lp(a)) with atherosclerosis. We developed a rapid,
one-step competitive immunochromatographic assay to measure Lp(a) in
plasma. The assay is performed on a nitrocellulose membrane strip and the
result is determined by a visual readout of rust-colored ***colloidal***
selenium. The assay is based on the principle that Lp(a) in the
sample will compete with Lp(a)-coated ***colloidal*** ***selenium*** for
binding to the anti-Lp(a) monoclonal antibody immobilized on the assay
strip in the format of four ladder bars. The number of capture bars that
appear as a result of the formation of ***colloidal*** ***selenium***
color is proportional to the concentration of the Lp(a) protein in the
samples. The strip assay semiquantitatively measures Lp(a) concentrations
ranging from 0 to 180 mg/L of Lp(a) protein in serum, plasma, or
fingerstick whole-blood samples. This assay appears very useful for quick
identification of individuals with above-normal concentrations of plasma
Lp(a) protein (gt 70 mg/L), and has potential for monitoring a patient's
response to treatment with Lp(a)-lowering drugs.

4/7/5 (Item 5 from file: 5)
DIALOG(R)File 5:BIOSIS Previews(R)
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0004266625 BIOSIS NO.: 198478002032
ORGANIC AND ***COLLOIDAL*** ***SELENIUM*** IN SOUTHERN CHESAPEAKE BAY USA
AND ADJACENT WATERS
AUTHOR: TAKAYANAGAI K (Reprint); WONG G T F
AUTHOR ADDRESS: CENT CHAMPLAIN SCI MER, C P 15,500, 901 CAP DIAMANT,
QUEBEC, CANADA, G1K 7Y7**CANADA
JOURNAL: Marine Chemistry 14 (2): p141-148 1983
ISSN: 0304-4203
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: River water, estuarine water and coastal seawater were collected
and filtered through glass-fiber filters. Subsamples of these 3 types of
waters were subsequently passed through AMICON DIAFLO ultrafilters (UM 2,
YM 5 and YM 10) individually. The filtrates were analyzed for dissolved
Se with and without oxidation by irradiation with UV light and for
dissolved organic C (DOC). The concentration of organic Se is calculated
as the difference in the concentrations of Se with and without UV
oxidation. The contribution of colloidal inorganic Se to total dissolved
inorganic Se decreases with increasing salinity. Colloidal inorganic Se
constitutes 77, 40 and 0% of the total dissolved inorganic Se in river
water, estuarine water and coastal seawater, respectively. Most of the
colloidal inorganic Se is found in material having nominal MW (NMW)
between 1000 and 5000. Organic Se is detected in all 3 types of waters.
The ratio of organic to inorganic Se ranges from 0.66-1.58. The lowest
ratio was observed in river water. Colloidal organic Se was also found in
all 3 types of waters. Its contribution to total dissolved organic Se
again decreases with increasing salinity. Colloidal organic selenium
constitutes 70, 64 and 35% of total dissolved organic Se in river water,
estuarine water and coastal seawater, respectively. Most of the organic
Se is found in material having low NMW. For a given sample, except in the

subsample of river water containing material with NMW above 10,000, the concentrations of organic Se in the filtrates are linearly related to those of DDC.

4/7/6 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0002679172 BIOSIS NO.: 197967068167
RETROPERITONEAL LYMPHOMA INVOLVING PANCREAS COMPLEMENTARY RADIO NUCLIDE
SCAN AND ULTRASONOGRAPHY
AUTHOR: KIM E E (Reprint); DELAND F H
AUTHOR ADDRESS: DIV NUCL MED, UNIV KY MED CENT, 800 ROSE ST, LEXINGTON, KY
40506, USA**USA
JOURNAL: Oncology (Basel) 35 (6): p271-273 1978
ISSN: 0030-2414
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Radionuclide emission tomography and ultrasonography were obtained on a patient with recurrent epigastric pain. In the pancreatic region an ultrasonic scan revealed a conglomerated mass. Following administration of 75Se-selenomethionine, the multiplane longitudinal tomographic scan demonstrated marked concentration of activity in the region of the pancreas which corresponded to a large defect in the hilus of the liver observed on prior liver-spleen scan with 99mTc-sulfur colloid. Surgery revealed a poorly differentiated histiocytic lymphoma in the retroperitoneum. The radionuclide and echographic scans of the retroperitoneal lymphomas are briefly discussed and their complementary role as a diagnostic tool stressed.

4/7/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0002136770 BIOSIS NO.: 197763057626
SENSITIVITY OF THE LIMULUS TEST AND INHIBITORY FACTORS IN THE RADIO
PHARMACEUTICALS
AUTHOR: MURATA H; KOBAYASHI M; IIO M; YAMADA H; CHIBA K; MATSUI K;
KAWAGUCHI S
JOURNAL: Journal of Nuclear Medicine 17 (12): p1088-1092 1976
ISSN: 0161-5505
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: Unspecified

ABSTRACT: The basic sensitivity of the Limulus test [Tachypleus tridentatus lysate] and the inhibitory factors were examined in 21 radiopharmaceuticals commonly used in Japan. The sensitivity of the Limulus test using pre-gel was 1 .mu.g/ml for Escherichia coli endotoxin. This sensitivity is about 10 times that of the rabbit test. The Limulus test was applicable, with full sensitivity and without inhibitory reaction, for the evaluation of 99mTcO4-, 99mTc-albumin, 99mTc-MAA [macroaggregated albumin], 99mTc-Sn-colloid, 131I-Hippuran, Na131I, Na251CrO4, 67Ga citrate and 57Co-bleomycin was commercially supplied. With 111In-DTPA [diethylenetriamine pentaacetic acid], 99mTc-phytate, 99mTc-pyrophosphate, 99mTc-DTPA, 131I-polyvinylpyrrolidone (PVP), 59FeCl3, Na232PO4, 198Au colloid and selenomethionine (Se-75), the pH required adjustment to avoid inhibition of the gelation reaction. Benzyl alcohol showed an inhibitory effect on the gelation reaction at concentrations of more than 1%. 131I-Bromsulphalein (BSP) and 131I-rose bengal showed intense inhibition of the gelation reaction.

4/7/8 (Item 8 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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0000883755 BIOSIS NO.: 197253010275
THE INFLUENCE OF SELENO UREA AND OF ***COLLOIDAL*** ***SELENIUM*** ON THE
SURVIVAL OF ESCHERICHIA-COLI B-R AFTER X IRRADIATION
AUTHOR: BADIELLO R; DI MAGGIO D; QUINTILIANI M; SAPORA O
JOURNAL: International Journal of Radiation Biology and Related Studies in
Physics Chemistry and Medicine 20 (1): p61-68 1971
ISSN: 0020-7616
DOCUMENT TYPE: Article
RECORD TYPE: Citation
LANGUAGE: Unspecified

4/7/9 (Item 1 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

18714071 PMID: 16136157
Quantum dots: a new quantum state?
Guyot-Sionnest Philippe
Nature materials (England) Sep 2005, 4 (9) p653-4, ISSN 1476-1122
Journal Code: 101155473
Publishing Model Print
Document type: News
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Record Date Created: 20050901
Record Date Completed: 20051011

4/7/10 (Item 2 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

18059309 PMID: 15884898
Monodispersed spherical colloids of Se@CdSe: synthesis and use as
building blocks in fabricating photonic crystals.
Jeong Unyong; Kim Jong-Uk; Xia Younan; Li Zhi-Yuan
Department of Chemistry, University of Washington, Seattle, Washington
98195-1700, USA.
Nano Lett (United States) May 2005, 5 (5) p937-42, ISSN 1530-6984
Journal Code: 101088070
Publishing Model Print
Document type: Evaluation Studies; Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Monodispersed spherical core-shell colloids of Se@Ag(2)Se have been
exploited as a chemical template to synthesize Se@CdSe core-shell particles
using a cation-exchange reaction. A small amount of tributylphosphine could
facilitate the replacement of Ag(+) by Cd(2+) in methanol at 50 degrees C
to complete the conversion within 150 min. The orthorhombic structure of
beta-Ag(2)Se changed to a well-defined wurtzite lattice for CdSe. The CdSe
shells could be converted back to beta-Ag(2)Se by reacting with AgNO(3) in
methanol at room temperature. Because of the uniformity in size and high
refractive index associated with the Se@CdSe core-shell colloids, they
could serve as a new class of building blocks to fabricate photonic
crystals with wide and strong stop bands.
Record Date Created: 20050511
Record Date Completed: 20050624

4/7/11 (Item 3 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

18059296 PMID: 15884885
Highly efficient multiple exciton generation in colloidal PbSe and PbS
quantum dots.
Ellingson Randy J; Beard Matthew C; Johnson Justin C; Yu Pingrong; Micic
Olga I; Nozik Arthur J; Shabaev Andrew; Efros Alexander L

Center for Basic Sciences, National Renewable Energy Laboratory, Golden,
Colorado 80401, USA. randy.ellington@nrel.gov

Nano Lett (United States) May 2005, 5 (5) p865-71, ISSN 1530-6984
Journal Code: 101088070

Publishing Model Print

Document type: Evaluation Studies; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

We report ultra-efficient multiple exciton generation (MEG) for single photon absorption in colloidal PbSe and PbS quantum dots (QDs). We employ transient absorption spectroscopy and present measurement data acquired for both intraband as well as interband probe energies. Quantum yields of 300% indicate the creation, on average, of three excitons per absorbed photon for PbSe QDs at photon energies that are four times the QD energy gap. Results indicate that the threshold photon energy for MEG in QDs is twice the lowest exciton absorption energy. We find that the biexciton effect, which shifts the transition energy for absorption of a second photon, influences the early time transient absorption data and may contribute to a modulation observed when probing near the lowest interband transition. We present experimental and theoretical values of the size-dependent interband transition energies for PbSe QDs. We present experimental and theoretical values of the size-dependent interband transition energies for PbSe QDs, and we also introduce a new model for MEG based on the coherent superposition of multiple excitonic states.

Record Date Created: 20050511

Record Date Completed: 20050624

4/7/12 (Item 4 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

17906134 PMID: 15656198

Cadmium sulfide and cadmium selenide/cadmium sulfide nanoparticles stabilized in water with poly(cysteine acrylamide).

Sherman Robert L; Chen Yiyan; Ford Warren T

Department of Chemistry, Oklahoma State University, Stillwater, Oklahoma 74078, USA.

Journal of nanoscience and nanotechnology (United States) Nov 2004, 4

(8) p1032-8, ISSN 1533-4880 Journal Code: 101088195

Publishing Model Print

Document type: Evaluation Studies; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Cysteine acrylamide (N-acryloyl L-cysteine) stabilizes CdS nanoparticles as the particles form in aqueous dispersions. Cysteine acrylamide also exchanges for citrate on the surfaces of CdSe and core/shell CdSe/CdS nanoparticles to provide greater stability. Heating of the nanoparticle dispersions polymerizes the cysteine acrylamide on the surface to form a more efficient polydentate stabilizer. The polymer-coated nanoparticle dispersions are colloiddally stable even after removal of low molecular weight solutes by dialysis. Emission quantum yields of the polymer-coated CdSe and CdSe/CdS samples were 0.9% and 2.6%, respectively, after aging of the samples in light. CdSe/CdS coated with poly(cysteine acrylamide) is colloiddally stable for at least two years in the dark at 5 degrees C.

Record Date Created: 20050119

Record Date Completed: 20050531

4/7/13 (Item 5 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

17727556 PMID: 15794621

Cytotoxicity of colloidal CdSe and CdSe/ZnS nanoparticles.

Kirchner Christian; Liedl Tim; Kudera Stefan; Pellegrino Teresa; Munoz Javier Almudena; Gaub Hermann E; Stolzle Sonja; Fertig N; Parak Wolfgang J
Center for Nanoscience, Ludwig Maximilians Universitat Munchen, Germany.

Nano Lett (United States) Feb 2005, 5 (2) p331-8, ISSN 1530-6984

Journal Code: 101088070

Publishing Model Print

Document type: Evaluation Studies; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Cytotoxicity of CdSe and CdSe/ZnS nanoparticles has been investigated for different surface modifications such as coating with mercaptopropionic acid, silanization, and polymer coating. For all cases, quantitative values for the onset of cytotoxic effects in serum-free culture media are given. These values are correlated with microscope images in which the uptake of the particles by the cells has been investigated. Our data suggest that in addition to the release of toxic Cd(2+) ions from the particles also their surface chemistry, in particular their stability toward aggregation, plays an important role for cytotoxic effects. Additional patch clamp experiments investigate effects of the particles on currents through ion channels.

Record Date Created: 20050329

Record Date Completed: 20050428

4/7/14 (Item 6 from file: 155)

DIALOG(R) File 155:MEDLINE(R)

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17727210 PMID: 15755099

Hybrid epitaxial-colloidal semiconductor nanostructures.

Woggon U; Herz E; Schops O; Artemyev M V; Arens Ch; Rousseau N; Schikora D; Lischka K; Litvinov D; Gerthsen D

Fachbereich Physik, Universitat Dortmund, Otto-Hahn-Str. 4, 44227 Dortmund, Germany. ulrike.woggon@uni-dortmund.de

Nano Lett (United States) Mar 2005, 5 (3) p483-90, ISSN 1530-6984

Journal Code: 101088070

Publishing Model Print

Document type: Evaluation Studies; Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

We present a growth technique which combines wet-chemical growth and molecular beam epitaxy (MBE) to create complex semiconductor nanostructures with nanocrystals as active optical material. The obtained results show that wet-chemically prepared semiconductor nanocrystals can be incorporated in an epitaxially grown crystalline cap layer. As an exemplary system we chose CdSe nanorods and CdSe(ZnS) core-shell nanocrystals in ZnSe and discuss the two limits of thin ($d \approx 2R$) and thick ($d > 2R$) ZnSe cap layers of thickness d for CdSe nanorods and nanodots of radii R between 2 and 4 nm. In contrast to the strain-induced CdSe/ZnSe Stranski-Krastanow growth of a quantum dot layer in a semiconductor heterostructure, the technique proposed here does not rely on strain and thus results in additional degrees of freedom for choosing composition, concentration, shape, and size of the nanocrystals. Transmission electron microscopy and X-ray diffractometry show that the ZnSe cap layer is of high crystalline quality and provides all parameters for a consecutive growth of Bragg structures, waveguides, or diode structures for electrical injection.

Record Date Created: 20050323

Record Date Completed: 20050428

4/7/15 (Item 7 from file: 155)

DIALOG(R) File 155:MEDLINE(R)

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17727203 PMID: 15755092

Selective growth of PbSe on one or both tips of colloidal semiconductor nanorods.

Kudera Stefan; Carbone Luigi; Casula Maria Francesca; Cingolani Roberto; Falqui Andrea; Snoeck Etienne; Parak Wolfgang J; Manna Liberato

Center for Nanoscience, Ludwig Maximilians Universitat Munchen, Munich, Germany.

Nano Lett (United States) Mar 2005, 5 (3) p445-9, ISSN 1530-6984

Journal Code: 101088070

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

PbSe nanocrystals with rock-salt structure are grown on the tips of colloidal CdS and CdSe nanorods. The facets of wurtzite rods provide a substrate with various degrees of reactivity for the growth of PbSe. The presence of dangling Cd bonds may explain subtle differences between nonequivalent facets resulting in the selective nucleation of PbSe only on one of the two tips of each CdS rod. This approach has the potential to facilitate the fabrication of heterostructures with tailored optical and electronic properties.

Record Date Created: 20050323

Record Date Completed: 20050428

4/7/16 (Item 8 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

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15427072 PMID: 15269797

Multi-step synthesis of nanoparticles performed on millisecond time scale in a microfluidic droplet-based system.

Shestopalov Ilya; Tice Joshua D; Ismagilov Rustem F

Department of Chemistry, The University of Chicago, 5735 South Ellis Avenue, Chicago, IL 60637, USA.

Lab on a chip (England) Aug 2004, 4 (4) p316-21, ISSN 1473-0197

Journal Code: 101128948

Publishing Model Print-Electronic

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

This paper reports a plug-based, microfluidic method for performing multi-step chemical reactions with millisecond time-control. It builds upon a previously reported method where aqueous reagents were injected into a flow of immiscible fluid (fluorocarbons) (H. Song et al., Angew. Chem. Int. Ed., 2003, 42, 768). The aqueous reagents formed plugs--droplets surrounded and transported by the immiscible fluid. Winding channels rapidly mixed the reagents in droplets. This paper shows that further stages of the reaction could be initiated by flowing additional reagent streams directly into the droplets of initial reaction mixture. The conditions necessary for an aqueous stream to merge with aqueous droplets were characterized. The Capillary number could be used to predict the behavior of the two-phase flow at the merging junction. By transporting solid reaction products in droplets, the products were kept from aggregating on the walls of the microchannels. To demonstrate the utility of this microfluidic method it was used to synthesize colloidal CdS and CdS/CdSe core-shell nanoparticles.

Record Date Created: 20040722

Record Date Completed: 20041008

Date of Electronic Publication: 20040705

4/7/17 (Item 9 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

15288544 PMID: 15074807

Fate of colloidal-particulate elemental selenium in aquatic systems.

Zhang Yiqiang; Zahir Zahir A; Frankenberger William T

Department of Environmental Sciences, University of California, Riverside, CA 92521, USA.

Journal of environmental quality (United States) Mar-Apr 2004, 33 (2)

p559-64, ISSN 0047-2425 Journal Code: 0330666

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Bacterial reduction of selenate [Se(VI)] to elemental Se [Se(0)] is considered an effective bioremediation technique to remove selenium (Se)

from agricultural drainage water. However, the fate of the newly formed Se(0) in aquatic systems is not known when it flows out of the treatment system. A set of laboratory experiments was conducted to determine the fate of the colloidal-particulate Se(0) in a water column and in a water-sediment system. Results showed that the newly formed colloidal-particulate Se(0) followed two removal pathways in aquatic systems: (i) flocculation-sedimentation to the bottom of the water and (ii) oxidation to selenite [Se(IV)] and Se(VI). During 58 d of the experiments, 51% of the added Se(0) was precipitated to the bottom of the water and 47% was oxidized to Se(IV) in the water column. In the water-sediment system, Se(IV) in the water accounted for 21 to 25% of the added Se(0). Adsorption of Se(IV) to the bottom sediment resulted in a relatively low amount of Se(IV) in the water. This study indicates that the newly formed Se(0) may be an available form of Se for uptake by organisms if it flows to aquatic systems from a treatment site. Therefore, an effective bioremediation system for removing Se from drainage water must reduce Se(VI) to Se(0) and remove Se(0) directly from the drainage water.

Record Date Created: 20040412

Record Date Completed: 20040615

4/7/18 (Item 10 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

15184891 PMID: 14759174

Near-complete suppression of quantum dot blinking in ambient conditions.

Hohng Sungchul; Ha Taekjip

Physics Department, University of Illinois, Urbana-Champaign, Urbana, Illinois 61801, USA.

Journal of the American Chemical Society (United States) Feb 11 2004,

126 (5) p1324-5, ISSN 0002-7863 Journal Code: 7503056

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Record Date Created: 20040204

Record Date Completed: 20040519

4/7/19 (Item 11 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

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14197479 PMID: 11996149

Modeling competitive adsorption of molybdate, sulfate, selenate, and selenite using a Freundlich-type multi-component isotherm.

Wu Chung-Hsin; Kuo Chao-Yin; Lo Shang-Lien; Lin Cheng-Fang

Department of Environmental Engineering and Health, Yuanpei Institute of Science and Health, Hsinchu City, Taiwan, ROC. chwu@pc.ymit.edu.tw

Chemosphere (England) Apr 2002, 47 (3) p283-92, ISSN 0045-6535

Journal Code: 0320657

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

This study examined the interactions of $\text{MoO}_4(2-)$ + $\text{SO}_4(2-)$, $\text{MoO}_4(2-)$ + $\text{SeO}_4(2-)$, and $\text{MoO}_4(2-)$ + $\text{SeO}_3(2-)$ systems on gamma-Al₂O₃ to better understand the competitive adsorption of these anions in the natural environment. The Freundlich isotherms of anionic adsorption onto gamma-Al₂O₃ in single and binary solutes were also investigated to estimate the competition between these anions. Experimental results indicate that a higher concentration of competitive solute yields a higher efficiency of the competitive solute's prevention of $\text{MoO}_4(2-)$ adsorption. The most significant result was found in the $\text{MoO}_4(2-)$ + $\text{SeO}_3(2-)$ system. The Freundlich isotherm constant (n) increases with the competitive solute concentration. The suitability of a Freundlich-type isotherm, the Sheindorf-Rebuhn-Sheintuch (SRS) equation, and the modified SRS equation in representing the competitive adsorption of $\text{MoO}_4(2-)$, $\text{SO}_4(2-)$, $\text{SeO}_4(2-)$, and

SeO₃(2-) on gamma-Al₂O₃ surface, was also examined. Each set of isotherm data was found to conform to linear SRS expressions, allowing competition coefficients to be derived on a concentration basis for each binary-solute system. The competition coefficient α_{ij} and relative affinity coefficients α_{ij} can be seen as a way to quantify competitive interactions. The proposed SRS and modified SRS equations are simple mathematical expressions accounting for competitive interactions of anions present in a mixture for the range of concentrations over which each individual component exhibits Freundlich behavior.

Record Date Created: 20020508

Record Date Completed: 20021105

4/7/20 (Item 12 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

13749695 PMID: 11337589

Linearly polarized emission from colloidal semiconductor quantum rods.

Hu J; Li Ls; Yang W; Manna L; Wang Lw; Alivisatos A P

Department of Chemistry, University of California at Berkeley, Berkeley, CA 94720, USA.

Science (United States) Jun 15 2001, 292 (5524) p2060-3, ISSN

0036-8075 Journal Code: 0404511

Contract/Grant No.: 1 R01 RR-14891-01; RR; NCRR

Publishing Model Print-Electronic

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Colloidal quantum rods of cadmium selenide (CdSe) exhibit linearly polarized emission. Empirical pseudopotential calculations predict that slightly elongated CdSe nanocrystals have polarized emission along the long axis, unlike spherical dots, which emit plane-polarized light. Single-molecule luminescence spectroscopy measurements on CdSe quantum rods with an aspect ratio between 1 and 30 confirm a sharp transition from nonpolarized to purely linearly polarized emission at an aspect ratio of 2. Linearly polarized luminescent chromophores are highly desirable in a variety of applications.

Record Date Created: 20010615

Record Date Completed: 20010705

Date of Electronic Publication: 20010503

4/7/21 (Item 13 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

10144600 PMID: 8472355

One-step competitive immunochromatographic assay for semiquantitative determination of lipoprotein(a) in plasma.

Lou S C; Patel C; Ching S; Gordon J

Abbott Diagnostics Division, Abbott Laboratories, North Chicago, IL 60064-3500.

Clinical chemistry (UNITED STATES) Apr 1993, 39 (4) p619-24, ISSN

0009-9147 Journal Code: 9421549

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Numerous studies have associated high concentrations of lipoprotein(a) [Lp(a)] with atherosclerosis. We developed a rapid, one-step competitive immunochromatographic assay to measure Lp(a) in plasma. The assay is performed on a nitrocellulose membrane strip and the result is determined by a visual readout of rust-colored **colloidal** **selenium**. The assay is based on the principle that Lp(a) in the sample will compete with Lp(a)-coated **colloidal** **selenium** for binding to the anti-Lp(a) monoclonal antibody immobilized on the assay strip in the format of four ladder bars. The number of capture bars that appear as a result of the formation of **colloidal** **selenium** color is proportional to the

concentration of the Lp(a) protein in the samples. The strip assay semiquantitatively measures Lp(a) concentrations ranging from 0 to 180 mg/L of Lp(a) protein in serum, plasma, or fingerstick whole-blood samples. This assay appears very useful for quick identification of individuals with above-normal concentrations of plasma Lp(a) protein (> 70 mg/L), and has potential for monitoring a patient's response to treatment with Lp(a)-lowering drugs.

Record Date Created: 19930514

Record Date Completed: 19930514

4/7/22 (Item 14 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

07231381 PMID: 3990589
Elemental selenium and glutathione reductase.
Nuttall K L
Medical hypotheses (ENGLAND) Feb 1985, 16 (2) p155-8, ISSN
0306-9877 Journal Code: 7505668
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
Selenium is an essential trace element important to several metabolic processes, although selenium in the chemical form of elemental selenium (Se degree) is commonly believed to be biologically inert. Recent data shows that colloidal suspensions of red amorphous elemental selenium are more easily reduced than previously thought, and that such reductions can potentially take place under biological conditions. The enzyme glutathione reductase, already known to be involved in selenium metabolism, is a good candidate to mediate the reduction of **colloidal selenium** to hydrogen selenide (H₂Se), a compound of established biological activity. The implications of this hypothesis include the possibility that elemental selenium may be biologically active at least under some conditions, and that glutathione reductase may function in selenium metabolism primarily by maintaining the glutathione concentration in a reduced state.
Record Date Created: 19850606
Record Date Completed: 19850606

4/7/23 (Item 15 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

04775243 PMID: 4620352
Selenourea and **colloidal selenium** : their role in radioprotection and radiosensitization of enzyme and cellular systems.
Badiello R; Saporita O; Simone G; Tamba M
Annali dell'Istituto superiore di sanita (ITALY) 1974, 10 (3-4)
p147-57, ISSN 0021-2571 Journal Code: 7502520
Publishing Model Print
Document type: Journal Article
Languages: ENGLISH
Main Citation Owner: NLM
Record type: MEDLINE; Completed
The effect of selenourea and of **colloidal selenium** on dilute aqueous solutions of the enzyme yeast alcoholdehydrogenase and on suspensions of E. coli B/r has been studied. Selenourea usually appears to protect meanwhile **colloidal selenium** radiosensitizes. The results are considered in terms of chemical stability of selenourea and of its free radical reactivity.
Record Date Created: 19760925
Record Date Completed: 19760925

4/7/24 (Item 16 from file: 155)
DIALOG(R)File 155:MEDLINE(R)
(c) format only 2005 Dialog. All rts. reserv.

03402104 PMID: 4936810

The influence of selenourea and of ***colloidal*** ***selenium*** on the survival of E. coli B-r after x-irradiation.

Badiello R; Di Maggio D; Quintiliani M; Saporita O

International journal of radiation biology and related studies in physics, chemistry, and medicine (ENGLAND) 1971, 20 (1) p61-8, ISSN 0020-7616 Journal Code: 0374725

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Record Date Created: 19711116

Record Date Completed: 19711116

4/7/25 (Item 17 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

03267664 PMID: 5900027

Oxidation of some thiols catalyzed by ***colloidal*** ***selenium***.

Scandurra R; Piccinini G; Cavallini D

Italian journal of biochemistry (ITALY) Nov-Dec 1964, 13 (6) p425-30

, ISSN 0021-2938 Journal Code: 0376564

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Record Date Created: 19710324

Record Date Completed: 19710324

4/7/26 (Item 18 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2005 Dialog. All rts. reserv.

02853039 PMID: 6003747

Colloidal ***selenium*** availability to 3 pasture species in pot culture.

Peterson P J; Butler G W

Nature (ENGLAND) Nov 26 1966, 212 (65) p961-2, ISSN 0028-0836

Journal Code: 0410462

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Record Date Created: 19690518

Record Date Completed: 19690518

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| Set | Items | Description |
|-----|-------|----------------------------------|
| S1 | 0 | (COLLOIDAL(W)SE(O)) AND NANO? |
| S2 | 0 | (COLLOIDAL(W)SELENIUM) AND NANO? |
| S3 | 0 | (COLLOIDAL(W)SELENIUM) AND NANO? |
| S4 | 26 | COLLOID(W)SELENIUM |

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|----|--------|-----------------|
| | 26 | S4 |
| | 228526 | DIAMETER |
| S5 | 0 | S4 AND DIAMETER |

? log y

27oct05 13:13:46 User217744 Session D939.3
\$3.68 0.624 DialUnits File5
\$12.30 6 Type(s) in Format 7
\$0.00 2 Type(s) in Format 66
\$12.30 8 Types
\$15.98 Estimated cost File5
\$2.36 0.694 DialUnits File155

\$3.96 18 Type(s) in Format 7
\$3.96 18 Types
\$6.32 Estimated cost File155
OneSearch, 2 files, 1.318 DialUnits FileOS
\$1.86 TELNET
\$24.16 Estimated cost this search
\$24.18 Estimated total session cost 1.638 DialUnits
Logoff: level 05.07.12 D 13:13:46

AUTHOR: VAN MONTFORT P F E; AGTERDENBOS J
JOURNAL: Talanta 21 (6): p660-663 1974
ISSN: 0039-9140
DOCUMENT TYPE: Article
RECORD TYPE: Citation
LANGUAGE: Unspecified
? s nanometer? and selenium
2409 NANOMETER?
20958 SELENIUM
S4 5 NANOMETER? AND SELENIUM
? t s4/7/1-5

4/7/1
DIALOG(R)File 5:Biosis Previews(R)
(c) 2005 BIOSIS. All rts. reserv.

0014698651 BIOSIS NO.: 200400079408
Linked redox precipitation of sulfur and ~~***selenium***~~ under anaerobic conditions by sulfate-reducing bacterial biofilms.
AUTHOR: Hockin Simon L; Gadd Geoffrey M (Reprint)
AUTHOR ADDRESS: Division of Environmental and Applied Biology, School of Life Sciences, Biological Sciences Institute, University of Dundee, Dundee, DD1 4HN, UK**UK
AUTHOR E-MAIL ADDRESS: g.m.gadd@dundee.ac.uk
JOURNAL: Applied and Environmental Microbiology 69 (12): p7063-7072
December 2003 ~~2003~~
MEDIUM: pInt
ISSN: 0099-2240 (ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A biofilm-forming strain of sulfate-reducing bacteria (SRB), isolated from a naturally occurring mixed biofilm and identified by 16S rDNA analysis as a strain of *Desulfomicrobium norvegicum*, rapidly removed 200 μ M selenite from solution during growth on lactate and sulfate. Elemental ~~***selenium***~~ and elemental sulfur were precipitated outside SRB cells. Precipitation occurred by an abiotic reaction with bacterially generated sulfide. This appears to be a generalized ability among SRB, arising from dissimilatory sulfide biogenesis, and can take place under low redox conditions and in the dark. The reaction represents a new means for the deposition of elemental sulfur by SRB under such conditions. A combination of transmission electron microscopy, environmental scanning electron microscopy, and cryostage field emission scanning electron microscopy were used to reveal the hydrated nature of SRB biofilms and to investigate the location of deposited sulfur-~~***selenium***~~ in relation to biofilm elements. When pregrown SRB biofilms were exposed to a selenite-containing medium, ~~***nanometer***~~-sized ~~***selenium***~~-sulfur granules were precipitated within the biofilm matrix. Selenite was therefore shown to pass through the biofilm matrix before reacting with bacterially generated sulfide. This constitutes an efficient method for the removal of toxic concentrations of selenite from solution. Implications for environmental cycling and the fate of sulfur and ~~***selenium***~~ are discussed, and a general model for the potential action of SRB in ~~***selenium***~~ transformations is presented.

4/7/2
DIALOG(R)File 5:Biosis Previews(R)
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0014175819 BIOSIS NO.: 200300134538
Separation and preconcentration of Se(IV)/Se(VI) species by selective adsorption onto ~~***nanometer***~~-sized titanium dioxide and determination by graphite furnace atomic absorption spectrometry.
AUTHOR: Li Shunxing; Deng Nansheng (Reprint)
AUTHOR ADDRESS: Department of Environment Science, Wuhan University, Wuhan, 430072, China**China
AUTHOR E-MAIL ADDRESS: nsdeng@whu.edu.cn
JOURNAL: Analytical and Bioanalytical Chemistry 374 (7-8): p1341-1345
December 2002 ~~2002~~

MEDIUM: print
ISSN: 1618-2642 (ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A simple and sensitive method for the selective determination of Se(IV) and Se(VI) in natural water and sludge samples through an adsorptive process on a ~~nanometer~~-sized TiO₂ (anatase) was developed. The conditions for quantitative and reproducible preconcentration, elution, and subsequent GFAAS determination were established. The proposed method gave a concentration factor of 50 for a 100 mL sample volume, characterized by high precision, high reproducibility, and direct determination of Se(IV)/Se(VI). The detection limits (3sigma, n=11) were 4.7 ng L⁻¹ for Se(IV) and 6.3 ng L⁻¹ for Se(VI); the precision (relative standard deviation) was 0.7% for Se(IV) and 0.9% for Se(VI) at the 0.5 µg L⁻¹ level.

4/7/3

DIALOG(R)File 5:Biosis Previews(R)
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0012871755 BIOSIS NO.: 200100043594

Formation of sphalerite (ZnS) deposits in natural biofilms of sulfate-reducing bacteria

AUTHOR: Labrenz Matthias; Druschel Gregory K; Thomsen-Ebert Tamara; Gilbert Benjamin; Welch Susan A; Kemner Kenneth M; Logan Graham A; Summons Roger E; De Stasio Gelsomina; Bond Philip L; Lai Barry; Kelly Shelly D; Banfield Jillian F (Reprint)

AUTHOR ADDRESS: Department of Geology and Geophysics, University of Wisconsin-Madison, 1215 West Dayton Street, Madison, WI, 53706, USA**USA
JOURNAL: Science (Washington D C) 290 (5497): p1744-1747 1 December, 2000 2000

MEDIUM: print
ISSN: 0036-8075
DOCUMENT TYPE: Article; Literature Review
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Abundant, micrometer-scale, spherical aggregates of 2- to 5-~~nanometer~~-diameter sphalerite (ZnS) particles formed within natural biofilms dominated by relatively aerotolerant sulfate-reducing bacteria of the family Desulfobacteriaceae. The biofilm zinc concentration is about 106 times that of associated groundwater (0.09 to 1.1 parts per million zinc). Sphalerite also concentrates arsenic (0.01 weight %) and ~~selenium~~ (0.004 weight %). The almost monomineralic product results from buffering of sulfide concentrations at low values by sphalerite precipitation. These results show how microbes control metal concentrations in groundwater- and wetland-based remediation systems and suggest biological routes for formation of some low-temperature ZnS deposits.

4/7/4

DIALOG(R)File 5:Biosis Previews(R)
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0011872258 BIOSIS NO.: 199900131918

Sorption and diffusion behaviour of ~~selenium~~ in tuff

AUTHOR: Tachi Y (Reprint); Shibutani T; Sato H; Yui M

AUTHOR ADDRESS: Power Reactor Nuclear Fuel Dev. Corp., Tokai Works, 4-33 Muramatsu, Tokai-mura, Ibaraki-ken 319-11, Japan**Japan

JOURNAL: Journal of Contaminant Hydrology 35 (1-3): p77-89 Dec. 15, 1998 1998

MEDIUM: print
ISSN: 0169-7722
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Sorption and diffusion behavior of Se in tuff was studied by batch sorption and through-diffusion experiments. Tuff samples used in the experiments were obtained from the Toki Lignite-Bearing Formation, Tono area, Gifu, central Japan. The experiments were carried out in a nitrogen glove-box with an oxygen level less than 1 ppm at room temperature. Batch sorption experiments of Se on crushed ruff samples and its constituent minerals were carried out in the pH range between 2 and 13. The fraction of Se sorbed on ruff was above 90% in the pH range below 8 and decreased to below 30% with increasing pH. Comparison of pH dependencies of sorption between tuff and its constituent minerals suggested that Fe minerals such as Fe-oxyhydroxide and pyrite contributed to Se sorption on tuff. Through-diffusion experiments of Se through intact tuff samples were carried out at the pH values of 8 and 11. Effective diffusion coefficients obtained at both pH values were almost the same, on the other hand, the distribution coefficient obtained at pH 8 was higher than that at pH 11 by one order of magnitude. This result was consistent qualitatively with the pH dependency of Se sorption by the batch experiments. However, the distribution coefficients obtained by the diffusion experiments were lower than those by the batch experiments and the differences were one order of magnitude. Correcting the difference of specific surface areas for crushed and intact ruff samples could not explain the difference between distribution coefficients obtained by batch sorption and diffusion experiments. Consideration of the pore size distribution by the mercury porosimetry suggested that the microscopic pores with size below several tens of ~~nanometers~~ might contribute slightly to sorption. The assumption that the pores with size below 20 nm are not concerned with sorption leads to the consistency of distribution coefficients between batch sorption and diffusion experiments.

4/7/5

DIALOG(R)File 5:Biosis Previews(R)
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0009485680 BIOSIS NO.: 199497506965

Capillarity and wetting of carbon nanotubes

AUTHOR: Dujardin E; Ebbesen T W (Reprint); Hiura H; Tanigaki K

AUTHOR ADDRESS: NEC Res. Inst., 4 Independence Way, Princeton, NJ 08540,
USA**USA

JOURNAL: Science (Washington D C) 265 (5180): p1850-1852 1994 1994

ISSN: 0036-8075

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: The wetting and capillarity of carbon nanotubes were studied in detail here. Nanotubes are not "super-straws," although they can be wet and filled by substances having low surface tension, such as sulfur, ~~selenium~~, and cesium, with an upper limit to this tension less than 200 millinewtons per meter. This limit implies that typical pure metals will not be drawn into the inner cavity of nanotubes through capillarity, whereas water and organic solvents will. These results have important implications for the further use of carbon nanotubes in experiments on a ~~nanometer~~ scale.

? log y

27Oct05 12:10:40 User217744 Session D938.3

\$20.08 3.404 DialUnits File5

\$129.15 63 Type(s) in Format 7

\$0.00 7 Type(s) in Format 66

\$129.15 70 Types

\$149.23 Estimated cost File5

\$1.60 TELNET

\$150.83 Estimated cost this search

\$150.85 Estimated total session cost 3.731 DialUnits

Logoff: level 05.07.12 D 12:10:40

Connecting via Winsock to Dialog

Logging in to Dialog

Trying 31060000009998...Open

DIALOG INFORMATION SERVICES

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Dialog level 05.07.12D

Last logoff: 27oct05 12:10:40

Logon file405 27oct05 13:07:07

>>>PROFILE is in a suspended state.

>>>Contact Dialog Customer Services to re-activate it.

* * *

SYSTEM:HOME

Cost is in DialUnits

Menu System II: D2 version 1.7.9 term=ASCII

*** DIALOG HOMEBASE(SM) Main Menu ***

Information:

1. Announcements (new files, reloads, etc.)
2. Database, Rates, & Command Descriptions
3. Help in Choosing Databases for Your Topic
4. Customer Services (telephone assistance, training, seminars, etc.)
5. Product Descriptions

Connections:

6. DIALOG(R) Document Delivery
7. Data Star(R)

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/L = Logoff

/NOMENU = Command Mode

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? b 410

27oct05 13:07:07 User217744 Session D939.1

\$0.00 0.220 DialUnits FileHomeBase

\$0.00 Estimated cost FileHomeBase

\$0.00 Estimated cost this search

\$0.00 Estimated total session cost 0.220 DialUnits

File 410:Chronolog(R) 1981-2005/Sep

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Set Items Description

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? set hi %%;set hi %%

HIGHLIGHT set on as '%%'%%'

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? b5, 155

27oct05 13:07:13 User217744 Session D939.2

\$0.00 0.100 DialUnits File410

\$0.00 Estimated cost File410

\$0.02 TELNET

\$0.02 Estimated cost this search

\$0.02 Estimated total session cost 0.320 DialUnits

SYSTEM:OS - DIALOG OneSearch

File 5:Biosis Previews(R) 1969-2005/Oct W4

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File 155:MEDLINE(R) 1951-2005/Oct 26

(c) format only 2005 Dialog

File 5:Biosis Previews(R) 1969-2005/Oct W4
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| Set | Items | Description |
|-----|----------------------|-----------------------|
| ? | s selenium diameter | |
| | S1 | 0 SELENIUM DIAMETER |
| ? | s selenium()diameter | |
| | 20958 | SELENIUM |
| | 124039 | DIAMETER |
| | S2 | 0 SELENIUM()DIAMETER |
| ? | s nano? and selenium | |
| | 28546 | NANO? |
| | 20958 | SELENIUM |
| | S3 | 65 NANO? AND SELENIUM |
| ? | t s3/7/1-65 | |

3/7/1

DIALOG(R)File 5:Biosis Previews(R)
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0015528257 BIOSIS NO.: 200510222757

Interfacing reversed-phase **nanohPLC** with ICP-MS and on-line isotope dilution analysis for the accurate quantification of **selenium** containing peptides in protein tryptic digests

AUTHOR: Giusti Pierre; Schaumloffel Dirk; Encinar Jorge Ruiz; Szpunar Joanna (Reprint)

AUTHOR ADDRESS: CNRS, UMR 5034, Grp Bioinorgan Analyt Chem, Helioparc, 2 Av Pr Angot, F-64053 Pau, France**France

AUTHOR E-MAIL ADDRESS: joanna.szpunar@univ-pau.fr

JOURNAL: Journal of Analytical Atomic Spectrometry 20 (10): p1101-1107

2005 2005

ISSN: 0267-9477

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: An interface between **nanohPLC** and ICP-MS was developed. It allowed the stable introduction into an ICP of mobile phases containing up to 90% of acetonitrile at flow rates of less than 500 nL min⁻¹. The on-line post-column addition of an isotopically enriched spike at flow rates of less than 4 nL min⁻¹ enabled isotope dilution quantification of heteroatom containing analytes while the consumption of the labelled isotope was low. The coupled system was applied to the accurate, sensitive and specific determination of selenopeptides in **nanolitre** volumes (11 nL) of a tryptic digest of selenomethionyl calmodulin (17 002 Da). The peptides were separated by reversed phase **nanohPLC** (340 nL min⁻¹ flow rate) whereas ICP collision cell MS was used for the simultaneous detection of 80 Se (analyte) and Se-76 (spike). The absolute detection limit was 40 fg (80 Se), a factor of 2 less than ever reported for a capillary HPLC-ICP-MS coupling. The sensitivity was constant during the chromatogram, regardless of the percentage of acetonitrile in the mobile phase. The **selenium** recovery was 103 +/- 4%. For selenopeptide analysis the sum of Se determined in each of the peaks equalled the total Se injected on the column. Since the tryptic peptides, miscleaved and/or oxidized peptides, incompletely digested protein and undigested protein could be determined in one run, the method allowed the precise evaluation of the efficiency and quality of tryptic digestion using several **nanolitres** of sample only.

3/7/2

DIALOG(R)File 5:Biosis Previews(R)
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0015509996 BIOSIS NO.: 200510204496

Effect of **Nano**-Se on immune and antioxidant function in training rats

AUTHOR: Hao XuanMing (Reprint); Li DongFeng; Wang XueQing

JOURNAL: Comparative Biochemistry and Physiology Part A Molecular & Integrative Physiology 140 (2): p272 FEB 2005 2005

CONFERENCE/MEETING: 5th Comparative Physiology Conference of the

Chinese-Association-for-Physiological-Sciences Zhuhai, PEOPLES R CHINA
June 28 -July 02, 2004; 20040628
SPONSOR: Chinese Assoc Physiol Sci
ISSN: 1095-6433
DOCUMENT TYPE: Meeting; Meeting Abstract
RECORD TYPE: Citation
LANGUAGE: English

3/7/3

DIALOG(R)File 5:Biosis Previews(R)
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0015461395 BIOSIS NO.: 200510155895
Melatonin-***selenium*** ***nanoparticles*** protects liver against
immunological injury induced by bacillus Calmette-Guerin and
lipopolysaccharide
AUTHOR: Wang Hua; Wei Wei (Reprint); Zhang Sheng-yi; Shen Yu-xian; Wang
Ni-ping; Yue Li; Xu Shu-yun
AUTHOR ADDRESS: Anhui Med Univ, Inst Clin Pharmacol, Hefei 230032, Peoples
R China**Peoples R China
AUTHOR E-MAIL ADDRESS: wwei@ahmu.edu.cn
JOURNAL: Acta Pharmacologica Sinica 26 (6): p745-752 JUN 2005 2005
ISSN: 1671-4083
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Aim: Melatonin-***selenium*** ***nanoparticle*** (MT-Se), a novel
complex, was synthesized by preparing ***selenium*** ***nanoparticles***
in a melatonin medium. The present investigation was designed to
determine the protective effects of MT-Se against immunological liver
injury in mice induced by bacillus Calmette-Guerin
(BCG)/lipopolysaccharide (LPS).Methods: The model of immunological liver
injury in mice was prepared. The levels of alanine aminotransferase,
aspartate aminotransferase, nitric oxide (NO) in serum, malondialdehyde
content, superoxide dismutase (SOD), and glutathione peroxidase (GSH-px)
activities in a liver homogenate were assayed by spectrophotometry. The
content of tumor necrosis factor-alpha (TNF-alpha) and interleukin-1
(IL-1) were determined by ELISA. The splenocyte proliferation was assayed
by 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide (MTT)
dye reduction. Meanwhile, a hepatic pathological examination was
observed.Results: In the BCG/LPS-induced hepatic injury model, MT-Se
administered at doses of 5, 10, or 20 mg/kg to the BCG/LPS-treated mice
for 10 d significantly reduced the increase in serum aminotransferase,
reduced the severe extent of hepatic cell damage and the immigration of
inflammatory cells. It also attenuated the increase in the content of
thiobarbituric acid-reactive substances and enhanced the decrease in
activities of SOD and GSH-px. In contrast, the treatment with MT-Se
suppressed the increase in NO level in both the serum and liver tissue.
Furthermore, MT-Se significantly lowered an increase in TNF-alpha and IL-
1 P levels in the liver and inhibited the production of TNF-alpha and
IL-1 beta by peritoneal macrophages. A downregulation effect of MT-Se on
splenocyte proliferation was also observed.Conclusion: MT-Se showed a
hepatic protective action on immunological liver injury in mice.

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0015416270 BIOSIS NO.: 200510110770
Immobilization and electrochemistry of negatively charged proteins on
modified ***nanocrystalline*** metal oxide electrodes
AUTHOR: Topoglidis Emmanuel (Reprint); Palomares Emilio; Astuti Yeni; Green
Alex; Campbell Colin J; Durrant James R
AUTHOR ADDRESS: Natl Ctr Sci Res Demokritos, Inst Phys Chem, Ag Paraskevi
Attikis, Athens 15310, Greece**Greece
AUTHOR E-MAIL ADDRESS: manosphd@yahoo.com
JOURNAL: Electroanalysis 17 (12): p1035-1041 JUN 05 2005
ISSN: 1040-0397

DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The immobilization of two acidic, low isoelectric point proteins, green fluorescence protein and ferredoxin (FRD) is investigated on **nanocrystalline**, mesoporous TiO₂ and SnO₂ electrodes. Modification of these electrodes with a cationic polypeptide (poly-L-lysine) or an aminosilane prior to protein immobilization is found to enhance protein binding at least ten fold, attributed to more favorable protein/electrode electrostatic interactions. Cyclic voltammetry studies of FRD-modified SnO₂ electrodes indicate reversible protein electrochemistry with a midpoint potential of -0.59 V (vs. Ag/AgCl) and an interfacial electron transfer rate constant of 0.45 s⁻¹.

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0015283553 BIOSIS NO.: 200500190618

A subchronic toxicity study of elemental **Nano**-Se in Sprague-Dawley rats

AUTHOR: Jia X; Li N; Chen J (Reprint)

AUTHOR ADDRESS: Inst Nutr and Food Safety, Chinese Ctr Dis Control and Prevent, Beijing, 100050, China**China

AUTHOR E-MAIL ADDRESS: jshchen@ilsichina-fp.org

JOURNAL: Life Sciences 76 (17): p1989-2003 March 11, 2005 2005

MEDIUM: print

ISSN: 0024-3205 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: The subchronic toxicity of **Nano**-Se was compared with selenite and high-**selenium** protein in rats. Groups of Sprague-Dawley rats (12 males and 12 females per group) were fed diets containing **Nano**-Se, selenite and high-**selenium** protein at concentrations of 0, 2, 3, 4 and 5 ppm Se, respectively, for 13 weeks. Clinical observations were made and body weight and food consumption were recorded weekly. At the end of the study, the rats were subjected to a full necropsy, blood samples were collected for hematology and clinical chemistry determination. Histopathological examination was performed on selected tissues. At the two higher doses (4 and 5 ppm Se), significant abnormal changes were found in body weight, hematology, clinical chemistry, relative organ weights and histopathology parameters. However, the toxicity was more pronounced in the selenite and high-**selenium** protein groups than the **Nano**-Se group. At the dose of 3 ppm Se, significant growth inhibition and degeneration of liver cells were found in the selenite and high-**selenium** protein groups. No changes attributable to administration of **Nano**-Se at the dose of 3 ppm Se were found. Taken together, the no-observed-adverse-effect level (NOAEL) of **Nano**-Se in male and female rats was considered to be 3 ppm Se, equivalent to 0.22 mg/kg bw/day for males and 0.33 mg/kg bw/day for females. On the other hand, the NOAELs of selenite and high-**selenium** protein in males and females were considered to be 2 ppm Se, equivalent to 0.14 mg/kg bw/day for males and 0.20 mg/kg bw/day for females. In addition, studies have shown that **Nano**-Se has a similar bioavailability in rat, and much less acute toxicity in mice compared with selenite. In conclusion, **Nano**-Se is less toxic than selenite and high-**selenium** protein in the 13-week rat study. Copyright 2004 Elsevier Inc. All rights reserved.

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0015264880 BIOSIS NO.: 200500171616

Zinc-specific autometallographic in vivo **selenium** methods: Tracing of zinc-enriched (ZEN) terminals, ZEN pathways, and pools of zinc ions in a

multitude of other ZEN cells
AUTHOR: Danscher Gorm (Reprint); Stoltenberg Meredin
AUTHOR ADDRESS: Inst AnatDept Neurobiol, Aarhus Univ, DK-8000, Aarhus, C,
Denmark**Denmark
AUTHOR E-MAIL ADDRESS: gd@neuro.au.dk
JOURNAL: Journal of Histochemistry & Cytochemistry 53 (2): p141-153
February 2005 2005
MEDIUM: print
ISSN: 0022-1554 _(ISSN print)
DOCUMENT TYPE: Article; Literature Review
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: In vivo-applied sodium selenide or sodium selenite causes the appearance of zinc-~~***selenium***~~ ~~***nanocrystals***~~ in places where free or loosely bound zinc ions are present. These ~~***nanocrystals***~~ can in turn be silver enhanced by autometallographic (AMG) development. The ~~***selenium***~~ method was introduced in 1982 as a tool for zinc-ion tracing, e.g., in vesicular compartments such as synaptic vesicles of zinc-enriched (ZEN) terminals in the central nervous system, and for visualization of zinc ions in ZEN secretory vesicles of, e.g., somatotrophic cells in the pituitary, zymogene granules in pancreatic acinar cells, beta-cells of the islets of Langerhans, Paneth cells of the crypts of Lieberkohn, secretory cells of the tubuloacinar glands of prostate, epithelium of parts of ductus epididymidis, and osteoblasts. If sodium selenide/selenite is injected into brain, spinal cord, spinal nerves containing sympathetic axons, or intraperitoneally, retrograde axonal transport of zinc-~~***selenium***~~ ~~***nanocrystals***~~ takes place in ZEN neurons, resulting in accumulation of zinc-~~***selenium***~~ ~~***nanocrystals***~~ in lysosomes of the neuronal somata. The technique is, therefore, also a highly specific tool for tracing ZEN pathways. The present review includes an update of the 1982 paper and presents evidence that only zinc ions are traced with the AMG ~~***selenium***~~ techniques if the protocols are followed to the letter.

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0015247163 BIOSIS NO.: 200500154228

Electrochemical vapor generation of ~~***selenium***~~ species after online photolysis and reduction by UV-irradiation under ~~***nano***~~ TiO₂ photocatalysis and its application to ~~***selenium***~~ speciation by HPLC coupled with atomic fluorescence spectrometry

AUTHOR: Liang Jing; Wang Qiuquan (Reprint); Huang Benli
AUTHOR ADDRESS: Dept Chem, Xiamen Univ, Xiamen, 361005, China**China
AUTHOR E-MAIL ADDRESS: qqwang@jingxian.xmu.edu.cn
JOURNAL: Analytical and Bioanalytical Chemistry. 381 (2): p366-372 January 2005 2005
MEDIUM: print
ISSN: 1618-2642 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: An online UV photolysis and UV/TiO₂ photocatalysis reduction device (UV-UV/TiO₂ PCRD) and an electrochemical vapor generation (ECVG) cell have been used for the first time as an interface between high-performance liquid chromatography (HPLC) and atomic fluorescence spectrometry (AFS) for ~~***selenium***~~ speciation. The newly designed ECVG cell of approximately 115µL dead volume consists of a carbon fiber cathode and a platinum loop anode; the atomic hydrogen generated on the cathode was used to reduce ~~***selenium***~~ to vapor species for AFS determination. The noise was greatly reduced compared with that obtained by use of the UV-UV/TiO₂ PCRD-KBH₄-acid interface. The detection limits obtained for seleno-DL-cystine (SeCys), selenite (SeIV), seleno-DL-methionine (SeMet), and selenate (SeVI) were 2.1, 2.9, 4.3, and 3.5ng mL⁻¹, respectively. The proposed method was successfully applied to the speciation of ~~***selenium***~~ in water-soluble extracts of garlic shoots cultured with different ~~***selenium***~~ species. The results obtained

suggested that UV-UV/TiO₂ PCRD-ECVG should be an effective interface between HPLC and AFS for the speciation of elements amenable to vapor generation, and is superior to methods involving KBH₄.

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0015240917 BIOSIS NO.: 200500147982

Comparison of short-term toxicity between **nanose** and selenite in mice

AUTHOR: Zhang Jinsong (Reprint); Wang Huali; Yan Xiangxue; Zhang Lide
AUTHOR ADDRESS: Univ Sci and Technol China, Hefei, 230052, China**China
AUTHOR E-MAIL ADDRESS: zjszyzcc@mail.hf.ah.cn
JOURNAL: Life Sciences 76 (10): p1099-1109 January 21, 2005 2005
MEDIUM: print
ISSN: 0024-3205 (ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: We previously reported that, as compared with selenite, **nanose** red elemental **selenium** (**nanose**) had lower acute toxicity in mice and similar bioavailability in terms of up-regulating seleno-enzymes. The short-term toxicity of both selenite and **nanose**-Se in mice was further compared in this study. At an oral dose of 6 mg/kg bw per day administered for consecutive 12 days, selenite and **nanose**-Se completely and partially suppressed mice growth respectively. Abnormal liver function was more pronounced with selenite treatment than **nanose**-Se as indicated by the increase of both alanine aminotransferase and aspartate aminotransferase in serum. Selenite inhibited liver catalase and superoxide dismutase activities, whereas, **nanose**-Se did not affect these two antioxidant enzymes. Selenite increased the malondialdehyde content of liver, but **nanose**-Se decreased it. Both Se forms had similar effects on depletion of reduced glutathione and up-regulated glutathione peroxidase. **nanose**-Se was more potent than selenite in the induction of glutathione S-transferase. At oral doses of 2 or 4 mg/kg bw per day for consecutive 15 days, selenite was more active than **nanose**-Se in suppressing growth, deleting reduced glutathione, and inhibiting superoxide dismutase activities. Taken together, these results indicate that over a short-term, a high-dose of selenite caused more pronounced oxidative stress, greater liver injury, and prominent retardation of growth as compared to **nanose**-Se. Copyright 2004 Elsevier Inc. All rights reserved.

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0015149899 BIOSIS NO.: 200500056964

Flow-injection simultaneous determination of **selenium**(IV) and **selenium**(IV + VI) using photooxidative coupling of p-hydrazinobenzenesulfonic acid with N-(1-naphthyl)ethylenediamine

AUTHOR: Nakano Shigenori (Reprint); Yoshii Masahiro; Kawashima Takuji
AUTHOR ADDRESS: Fac Educ and Reg SciDept Environm Sci, Tottori Univ, Koyama Cho, Tottori, 6808551, Japan**Japan
AUTHOR E-MAIL ADDRESS: nakano@fed.tottori-u.ac.jp
JOURNAL: Talanta 64 (5): p1266-1272 December 15, 2004 2004
MEDIUM: print
ISSN: 0039-9140 (ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A flow-injection spectrophotometric method has been developed for the simultaneous determination of **selenium**(IV) and (IV + VI) at **nanogram**, per milliliter levels. It is based on the catalytic effect of **selenium**(IV) on the photooxidative coupling of

p-hydrazinobenzenesulfonic acid (HBS) with N-(1-naphthyl)ethylenediamine (NED) to form an azo dye ($\lambda_{\text{max}} = 538 \text{ nm}$). In this reaction, bromide acted as an activator for the catalysis of $\text{Se}(\text{IV})$ and an reducer for $\text{Se}(\text{VI})$ to $\text{Se}(\text{IV})$ in an acidic medium which allowed the determination of $\text{Se}(\text{IV} + \text{VI})$. A sample solution, being split by Y-piece into two portions, passed through the low-temperature coil (4 m, 25°C) and the high-temperature coil (20 m, 100°C). By monitoring the absorbance of the dye produced in the two portions, $\text{Se}(\text{IV})$ and $\text{Se}(\text{IV} + \text{VI})$ in the range of 0.2–6 ng ml⁻¹ were determined simultaneously. The relative standard deviations for 3 ng ml⁻¹ $\text{Se}(\text{IV})$ and $\text{Se}(\text{VI})$ (n = 10) were 1.2 and 1.3%, respectively. There were few interfering ions in the Se determination. The proposed method was applied to the determination of $\text{Se}(\text{IV})$ and $\text{Se}(\text{VI})$ in natural water samples. Copyright 2004 Elsevier B.V. All rights reserved.

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0015131221 BIOSIS NO.: 200500038286

Enriched accumulation and biotransformation of Se in the edible seaweed *Laminaria japonica*

AUTHOR: Yan Xiaojun (Reprint); Zheng Li; Chen Haimin; Lin Wei; Zhang Weiwei

AUTHOR ADDRESS: Marine Biotechnol Lab, Ningbo Univ, Post Box 71, Ningbo, 315211, China**China

AUTHOR E-MAIL ADDRESS: xiaojunyan@hotmail.com

JOURNAL: Journal of Agricultural and Food Chemistry 52 (21): p6460-6464

October 20, 2004 2004

MEDIUM: print

ISSN: 0021-8561

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Accumulations of Se in kelp *Laminaria japonica* cultured in seawater was achieved by adding selenite (Na_2SeO_3) with or without N-P ($\text{NaNO}_3 + \text{NaH}_2\text{PO}_4$) nutrients at different concentrations. Biotransformation of Se in the kelp was investigated through measuring the Se of biological samples and different biochemical fractionations. The results showed that the optimal selenite-enrichment concentration is 200 mg L⁻¹, which can allow the kelp to accumulate a total Se content from 0.51 \pm 0.15 to 26.23 \pm 3.12 $\mu\text{g g}^{-1}$ of fresh weight (fw). Se composition analysis of kelp (control group) showed that Se is present as organic Se , which is up to 86.22% of the total Se , whereas inorganic Se is barely 4.85%. When *L. japonica* was exposed for 56 h in seawater containing 200 mg L⁻¹ Na_2SeO_3 , the organic Se was 16.70 $\mu\text{g g}^{-1}$ of fw (68.23%) and inorganic Se was 4.71 $\mu\text{g g}^{-1}$ of fw (19.26%). The capability of accumulation of Se was further enhanced by adding N-P nutrients to the selenite-enriched medium. Total Se is increased to be 33.65 $\mu\text{g g}^{-1}$ of fw at optimal concentration of N-P nutrient (150 mg L⁻¹ NaNO_3 and 25 mg L⁻¹ NaH_2PO_4), whereas the inorganic Se was not increased and remained at 4.597 $\mu\text{g g}^{-1}$ of fw (13.36%), and the increased part of Se was organic Se . This implied that kelp *L. japonica* could effectively transform inorganic Se into organic Se through metabolism.

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0015119444 BIOSIS NO.: 200500026509

Potential mechanism of the enhancement of photoluminescence of CdSe quantum dots under UV irradiation: role of free Cd and Se ions

AUTHOR: Zhelev Z; Jose R; Bakalova R; Nagase T; Ohba H; Ishikawa M; Baba Y

JOURNAL: Luminescence (Chichester) 19 (3): p192 May 2004 2004

MEDIUM: print
CONFERENCE/MEETING: 13th International Symposium on Bioluminescence and Chemiluminescence Yokohama, Japan August 02-06, 2004; 20040802
ISSN: 1522-7235 _(ISSN print)
DOCUMENT TYPE: Meeting; Meeting Abstract
RECORD TYPE: Citation
LANGUAGE: English

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0015118566 BIOSIS NO.: 200500025631
Formation of redox active **nanoselenium** on reaction of RONS with selenourea, a known radioprotector
AUTHOR: Priyadarsini I; Mishra B; Mohan H
JOURNAL: Free Radical Biology & Medicine 36 (Suppl. 1): pS147-S148 2004 2004

MEDIUM: print
CONFERENCE/MEETING: 12th Biennial Meeting of the Society for Free Radical Research International Buenos Aires, Argentina May 05-09, 2004; 20040505
SPONSOR: Society for Free Radical Research International
ISSN: 0891-5849 _(ISSN print)
DOCUMENT TYPE: Meeting; Meeting Abstract
RECORD TYPE: Citation
LANGUAGE: English

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0015098837 BIOSIS NO.: 200500004085
Surface-modified CdSe quantum dots as luminescent probes for cyanide determination
AUTHOR: Jin Wei Jun; Costa-Fernandez Jose M; Pereiro Rosario; Sanz-Medel Alfredo (Reprint)
AUTHOR ADDRESS: Dept Phys and Analyt Chem, Univ Oviedo, Julian Claveria 8, E-33006, Oviedo, Spain**Spain
AUTHOR E-MAIL ADDRESS: asm@uniovi.es
JOURNAL: Analytica Chimica Acta 522 (1): p1-8 September 20, 2004 2004
MEDIUM: print
ISSN: 0003-2670 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Luminescent surface-modified CdSe semiconductor quantum dots (QDs), with **nanoparticle** (NP) size distribution in the order of 2-7 nm, have been synthesized for optical determination of cyanide ions. The **nanoparticles** have been functionalised with tert-butyl-N-(2-mercaptoethyl)-carbamate (BMC) groups and exhibit a strong fluorescent emission at about 580 nm with rather long fluorescence lifetimes (several hundred **nanoseconds**) in aerated methanolic solution. The observed luminescence emitted by the synthesized **nanocrystals** was tremendously increased by photo-activation under sunlight exposure. The functionalised QDs turned out to exhibit excellent long-term stability when stored in the dark (no significant changes in QDs luminescence emission intensity was observed even after two months from synthesis). The functionalisation of the NPs with carbamate ligand allowed a highly sensitive determination of free cyanide via analyte-induced changes in the photoluminescence (fluorescence quenching of intensity at 580 nm and lifetime changes) of the modified quantum dots (excited at 400 nm). A detection limit of 1.1×10^{-7} M (2.9 $\mu\text{g l}^{-1}$) of cyanide ions was obtained, while the interfering effect of other inorganic anions (including NO_3^- , Cl^- or SCN^-) was negligible even at 200-fold level concentrations in excess of cyanide. Copyright 2004 Elsevier B.V. All rights reserved.

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0015082334 BIOSIS NO.: 200400463563

Single-crystal **nanowires** of platinum can be synthesized by
controlling the reaction rate of a polyol process

AUTHOR: Chen Jingyi; Herricks Thurston; Geissler Matthias; Xia Younan
(Reprint)

AUTHOR ADDRESS: Dept Chem, Univ Washington, Seattle, WA, 98195, USA**USA

AUTHOR E-MAIL ADDRESS: xia@chem.washington.edu

JOURNAL: Journal of the American Chemical Society 126 (35): p10854-10855
September 8, 2004 2004

MEDIUM: print

ISSN: 0002-7863 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Citation

LANGUAGE: English

3/7/15

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0015081991 BIOSIS NO.: 200400463220

Effect of **nanos** red elemental **selenium** on GPx activity of
broiler chick kidney cells in vitro

AUTHOR: Xu Bao-hua; Xu Zi-Rong (Reprint); Xia Mei-sheng; Hu Cai-hong; Deng
Yue-Song; Xiong Li

AUTHOR ADDRESS: Coll Anim Sci, Zhejiang Univ, Hangzhou, Zhejiang, 310029,
China**China

AUTHOR E-MAIL ADDRESS: bhxu65@www.sohu.com; zaufsi@public.hz.zj.cn

JOURNAL: Wuhan University Journal of Natural Sciences 8 (4): p1161-1166
December 2003 2003

MEDIUM: print

ISSN: 1007-1202 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: A new **selenium** source, **Nano** red elemental
selenium (**Nano**-Se) was used to study the effect on the GPx
activity of broiler chick kidney cells (BCKC) in vitro, Sodium selenite
(Na₂SeO₃) and seleno-L-methionine (Se-Met) were used as the controls. The
results showed that the effects of three kinds of Se forms on the GPx
activity of BCKC were accordant ($p > 0.05$) compared with each other at 0.01,
0.05 and 0.10 $\mu\text{mol/L}$ Se concentrations treatments. In the range of
0.00-0.10 $\mu\text{mol/L}$ Se concentrations, the GPx activity increased with
elevation of Se concentrations in medium. For the three kinds of Se
forms, the GPx activity reached the climax at 0.10 $\mu\text{mol/L}$ Se
concentration. At 0.20 and 0.30 $\mu\text{mol/L}$ Se concentrations, the influences
of three kinds of Se forms were not accordant with one another. For
Nano-Se, the GPx activity at 0.20 and 0.30 $\mu\text{mol/L}$ Se
concentrations remained the same as that at 0.10 $\mu\text{mol/L}$ Se concentration
treatment. For Se-Met, the GPx activity at 0.20 $\mu\text{mol/L}$ Se concentration
treatment remained the same with 0.10 $\mu\text{mol/L}$ treatment; the GPx activity
at 0.30 $\mu\text{mol/L}$ Se concentration treatment was declined
significantly ($p < 0.05$) compared with 0.10 or 0.20 $\mu\text{mol/L}$ treatment. For
Na₂SeO₃, the GPx activity failed gradually with Se concentration
increasing from 0.10 $\mu\text{mol/L}$ to 0.30 $\mu\text{mol/L}$, and at 0.30 $\mu\text{mol/L}$ Se
concentration treatment, the GPx activity was less than the original of
BCKC. The results implicated, on the GPx activity of BCKC in vitro, the
ranking of width range of the most suitable Se concentration for
nutrition curve of the three Se formes is **Nano**-Se > Se-Met > Na₂SeO₃.

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0015005850 BIOSIS NO.: 200400376639

Nanocrystals as a new class of macromolecules
AUTHOR: Alivisatos A Paul (Reprint)
AUTHOR ADDRESS: Univ Calif Berkeley, Berkeley, CA, 94720, USA**USA
JOURNAL: Cytometry 59A (1): p29 May 2004 2004
MEDIUM: print
CONFERENCE/MEETING: XXII Congress of the International Society for
Analytical Cytology
SPONSOR: International Society for Analytical Cytology
ISSN: 0196-4763 (ISSN print)
DOCUMENT TYPE: Meeting; Meeting Abstract
RECORD TYPE: Citation
LANGUAGE: English

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0014939648 BIOSIS NO.: 200400310405
Selenium compounds modulate the calcium release channel/ryanodine
receptor of rabbit skeletal muscle by oxidizing functional thiols
AUTHOR: Xia Ruohong; Ganther Howard E; Egge Adam; Abramson Jonathan J
(Reprint)
AUTHOR ADDRESS: Dept Phys, Portland State Univ, Portland, OR, 97207, USA**
USA
AUTHOR E-MAIL ADDRESS: abramsonj@pdx.edu
JOURNAL: Biochemical Pharmacology 67 (11): p2071-2079 June 1, 2004 2004
MEDIUM: print
ISSN: 0006-2952
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: ***Selenium*** compounds, such as sodium selenite and Ebselen
were shown to increase high affinity ryanodine binding to the skeletal
muscle type ryanodine receptor (RyR1) at ***nanomolar*** concentrations,
and inhibit the receptor at low micromolar concentrations. This biphasic
response was observed in both concentration and time-dependent assays.
Extensive washing did not reverse either the stimulation or suppression
of receptor binding, but both were prevented or reversed by addition of
reduced glutathione, GSH. ***Selenium*** compounds were also shown to
induce Ca2+ release from the isolated sarcoplasmic reticulum vesicles.
Sodium selenite and Ebselen stimulated the skeletal muscle ryanodine
receptor by oxidizing 14 of 47 free thiols per monomer on RyR1 (as
detected with the alkylating agent
7diethylamino-3-(4'-maleimidylphenyl)-4-methylcoumarin) (CPM). Oxidation
of the remaining thiols by these ***selenium*** compounds resulted in
inhibition of the ryanodine receptor. Copyright 2004 Elsevier Inc. All
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0014921850 BIOSIS NO.: 200400292607
Nano red elemental ***selenium*** has no size effect in the induction
of seleno-enzymes in both cultured cells and mice
AUTHOR: Zhang Jinsong; Wang Huali; Bao Yongping; Zhang Lide (Reprint)
AUTHOR ADDRESS: Inst Econ and Technol, Univ Sci and Technol China, Meling
Ave 121, Hefei, Anhui, 230052, China**China
AUTHOR E-MAIL ADDRESS: zjszyzcc@mail.hf.ah.cn
JOURNAL: Life Sciences 75 (2): p237-244 May 28, 2004 2004
MEDIUM: print
ISSN: 0024-3205 (ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: We previous reported that a ***nano*** red elemental
selenium (***)Nano***-Se) in the range from 20 dollar sign 60 nm had

similar bioavailability to sodium selenite (BioFactors 15 (2001) 27). We recently found that ***Nano***-Se with different size had marked difference in scavenging an array of free radicals in vitro, the smaller the particle, the better scavenging activity (Free Radic. Biol. Med. 35 (2003) 805). In order to examine whether there is a size effect of ***Nano***-Se in the induction of Se-dependent enzymes, a range of ***Nano***-Se (5 dollar sign 200 nm) have been prepared based on the control of elemental Se atom aggregation. The sizes of ***Nano***-Se particles were inversely correlated with protein levels in the redox system of selenite and glutathione. Different sizes of red elemental Se were prepared by adding varying amount of bovine serum albumin (BSA). Three different sizes of ***Nano***-Se (5 dollar sign 15 nm, 20 dollar sign 60 nm, and 80 dollar sign 200 nm) have been chosen for the comparison of biological activity in terms of the induction of seleno-enzyme activities. Results showed that there was no significant size effect of ***Nano***-Se from 5 to 200 nm in the induction of glutathione peroxidase (GPx), phospholipid hydroperoxide glutathione peroxidase (PHGPx) and thioredoxin reductase-1 (TrxR-1) in human hepatoma HepG2 cells and the livers of mice. Copyright 2004 Elsevier Inc. All rights reserved.

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0014894417 BIOSIS NO.: 200400265174

Direct identification of trace metals in fine and ultrafine particles in the Detroit urban atmosphere

AUTHOR: Utsunomiya Satoshi; Jensen Keld A; Keeler Gerald J; Ewing Rodney C
(Reprint)

AUTHOR ADDRESS: Dept Geol Sci, Univ Michigan, 1006 CC Little Bldg, Ann Arbor, MI, 48109, USA**USA

AUTHOR E-MAIL ADDRESS: rodewing@umich.edu

JOURNAL: Environmental Science & Technology 38 (8): p2289-2297 April 15, 2004 2004

MEDIUM: print

ISSN: 0013-936X (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Exposure to airborne particulates containing low concentrations of heavy metals, such as Pb, As, and Se, may have serious health effects. However, little is known about the speciation and particle size of these airborne metals. Fine- and ultrafine particles with heavy metals in aerosol samples from the Detroit urban area, Michigan, were examined in detail to investigate metal concentrations and speciation. The characterization of individual particles was completed using high-angle annular dark-field scanning transmission electron microscopy (HAADF-STEM) combined with conventional high-resolution TEM techniques. The trace elements, Pb, As, La, Ce, Sr, Zn, Cr, Se, Sn, Y, Zr, Au, and Ag, were detected, and the elemental distributions were mapped in situ at the ***nanoscale***. The crystal structures of the particles containing Pb, Sr, Zn, and Au were determined from their electron diffraction patterns. Based on the characterization of the representative trace element particles, the potential health effects are discussed. Most of the trace element particles detected in this study were within a range of 0.01-1.0 μm in size, which has the longest atmospheric residence time (dollar sign100 days). Increased chemical reactivity owing to the size of ***nanoparticles*** may be expected for most of the trace metal particles observed.

3/7/20

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0014848289 BIOSIS NO.: 200400218344

Control of protein structure and function through surface recognition by tailored ***nanoparticle*** scaffolds.

AUTHOR: Hong Rui; Fischer Nicholas O; Verma Ayush; Goodman Catherine M;
Emrick Todd (Reprint); Rotello Vincent M
AUTHOR ADDRESS: Department of Polymer Science and Engineering, University
of Massachusetts, Amherst, MA, 01003, USA**USA
AUTHOR E-MAIL ADDRESS: tsemrick@mail.pse.umass.edu; rotello@chem.umass.edu
JOURNAL: Journal of the American Chemical Society 126 (3): p739-743
January 28, 2004 2004
MEDIUM: print
ISSN: 0002-7863 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Thioalkyl and thioalkylated oligo(ethylene glycol) (OEG) ligands
with chain-end functionality were used to fabricate water-soluble CdSe
nanoparticle scaffolds. Surface recognition of chymotrypsin (ChT)
was achieved using these functionalized nanoparticle scaffolds,
with three levels of interaction demonstrated: no interaction (OEG
terminated with hydroxyl group), inhibition with denaturation
(carboxylate-terminated thioalkyl ligands), and inhibition with retention
of structure (carboxylate-terminated OEG). The latter process was
reversible upon an increase in ionic strength, with essentially complete
restoration of enzymatic activity.

3/7/21

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0014840418 BIOSIS NO.: 200400208051
Fluorescence resonance energy transfer between quantum dot donors and
dye-labeled protein acceptors.
AUTHOR: Clapp Aaron R; Medintz Igor L; Mauro J Matthew; Fisher Brent R;
Bawendi Mounji G; Mattoussi Hedi (Reprint)
AUTHOR ADDRESS: Optical Sciences Division, U.S. Naval Research Laboratory,
Code 5611, Washington, DC, 20375, USA**USA
AUTHOR E-MAIL ADDRESS: hedimat@ccs.nrl.navy.mil
JOURNAL: Journal of the American Chemical Society 126 (1): p301-310
January 14, 2004 2004
MEDIUM: print
ISSN: 0002-7863 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: We used luminescent CdSe-ZnS core-shell quantum dots (QDs) as
energy donors in fluorescent resonance energy transfer (FRET) assays.
Engineered maltose binding protein (MBP) appended with an oligohistidine
tail and labeled with an acceptor dye (Cy3) was immobilized on the
nanocrystals via a noncovalent self-assembly scheme. This
configuration allowed accurate control of the donor-acceptor separation
distance to a range smaller than 100 Å and provided a good model system
to explore FRET phenomena in QD-protein-dye conjugates. This QD-MBP
conjugate presents two advantages: (1) it permits one to tune the degree
of spectral overlap between donor and acceptor and (2) provides a unique
configuration where a single donor can interact with several acceptors
simultaneously. The FRET signal was measured for these complexes as a
function of both degree of spectral overlap and fraction of dye-labeled
proteins in the QD conjugate. Data showed that substantial acceptor
signals were measured upon conjugate formation, indicating efficient
nonradiative exciton transfer between QD donors and dye-labeled protein
acceptors. FRET efficiency can be controlled either by tuning the QD
photoemission or by adjusting the number of dye-labeled proteins
immobilized on the QD center. Results showed a clear dependence of the
efficiency on the spectral overlap between the QD donor and dye acceptor.
Apparent donor-acceptor distances were determined from efficiency
measurements and corresponding Forster distances, and these results
agreed with QD bioconjugate dimensions extracted from structural data and
core size variations among QD populations.

3/7/22

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0014811320 BIOSIS NO.: 200400192077

Effect of increasing selenite concentrations, vitamin E supplementation and different fetal calf serum content on GPx1 activity in primary cultured rabbit hepatocytes.

AUTHOR: Mueller Andreas S; Pallauf Josef (Reprint)

AUTHOR ADDRESS: Institut fuer Tierernaehrung und Ernaehrungsphysiologie der Justus-Liebig-Universitaet Giessen, Heinrich-Buff-Ring 26-32, D-35392, Giessen, Germany**Germany

AUTHOR E-MAIL ADDRESS: josef.pallauf@ernaehrung.uni-giessen.de

JOURNAL: Journal of Trace Elements in Medicine and Biology 17 (3): p

183-192 2003 2003

MEDIUM: print

ISSN: 0946-672X (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Primary rabbit hepatocytes from 6 week old female New Zealand White rabbits (3.0X10⁶ viable hepatocytes per treatment) were incubated for 24 h or 48 h with two basic variants of the *****selenium***** and vitamin E free DMEM/F12-HAM nutrition medium containing 2.5% or 10% fetal calf serum (FCS). *****Selenium***** and vitamin E concentrations of the media were varied by the addition of 0, 10, 50 and 100 ng Se/mL medium as sodium selenite and 100 mug alpha-tocopheryl acetate/mL. Lactic dehydrogenase (LDH) leakage of the hepatocytes was not influenced by the various *****selenium***** concentrations of the media, whereas vitamin E addition significantly inhibited LDH release. The activity of cellular glutathione peroxidase (GPx1) was markedly induced by increasing the *****selenium***** supplementation of the culture media. Vitamin E supply further enhanced GPx1 induction. In hepatocytes cultivated at the lower serum concentration (2.5% FCS), increasing the selenite concentration of the media raised GPx1 and reduced the intracellular levels of the reduced tripeptide glutathione (GSH). No vectored relation between the *****selenium***** concentration of the media and the activity of superoxide dismutase (SOD) could be observed. After both incubation periods (24 h and 48 h) SOD activity was significantly higher in the cytosol of hepatocytes grown in media containing 10% FCS as compared to cells incubated at the 2.5% FCS level. Furthermore, SOD activity was reduced by the addition of vitamin E to the media. In conclusion the results indicate an effective metabolism of rabbit hepatocytes for selenite even in amounts as low as *****nanograms*****. A general cytoprotective role for vitamin E can be shown by its ability to decrease LDH leakage and by the reduction of SOD activity.

3/7/23

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0014785211 BIOSIS NO.: 200400151872

Photoluminescence studies of CdSe *****nanocrystals***** conjugated with biomolecules.

AUTHOR: Hwang Jeeseong (Reprint); Krogmeier Jeffrey R (Reprint); Tokumasu Fuyuki; Briggman Kimberly A (Reprint); Dvorak James A

AUTHOR ADDRESS: Optical Technology Division, NIST, Gaithersburg, MD, USA** USA

JOURNAL: Biophysical Journal 86 (1): p481a-482a January 2004 2004

MEDIUM: print

CONFERENCE/MEETING: 48th Annual Meeting of the Biophysical Society

Baltimore, MD, USA February 14-18, 2004; 20040214

SPONSOR: Biophysical Society

ISSN: 0006-3495 (ISSN print)

DOCUMENT TYPE: Meeting; Meeting Abstract

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Semiconductor *****nanocrystals***** show high photostability and

fluorescence quantum yields, which are invaluable for probing target specificity in many biological applications. In addition to their excellent optical properties, the fluorescent characteristics of semiconductor **nanocrystals** are known to be strongly dependent upon their microenvironment. Previous studies have revealed that the surface energy of **nanocrystals** is very susceptible to the electron-affinity of surface-conjugated molecules and matrix materials resulting in changes in their fluorescent properties. We are establishing fluorescent standards of CdSe **nanocrystals** to use them as probes for the detection of local properties of complex biological and biomimetic systems. Our approach includes the measurement of excitation time-dependent luminescence from self-assembled CdSe **nanocrystals** in highly defined electrostatic environments, including **nanocrystals** conjugated to various materials such as functionalized single wall carbon **nanotubes**, negatively charged sialo-glycosphingolipids, streptavidins, biotins, and antibodies. In addition to ensemble-averaged measurements, the optical properties of individual bio-conjugated **nanocrystals** are being studied using confocal microscopy. We will discuss the significance of these measurements as **nanocrystal** standards and their importance as biological probes for the study of human infectious diseases such as malaria.

3/7/24

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0014756720 BIOSIS NO.: 200400127477

Structural and spectral features of **selenium** **nanospheres** produced by Se-respiring bacteria.

AUTHOR: Oremland Ronald S (Reprint); Herbel Mitchell J; Blum Jodi Switzer; Langley Sean; Beveridge Terry J; Ajayan Pulickel M; Sutto Thomas; Ellis Amanda V; Curran Seamus

AUTHOR ADDRESS: U.S. Geological Survey, 345 Middlefield Rd., MS 480, Menlo Park, CA, 94025, USA**USA

AUTHOR E-MAIL ADDRESS: roremlan@usgs.gov

JOURNAL: Applied and Environmental Microbiology 70 (1): p52-60 January 2004 2004

MEDIUM: print

ISSN: 0099-2240 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Certain anaerobic bacteria respire toxic **selenium** oxyanions and in doing so produce extracellular accumulations of elemental **selenium** (Se(0)). We examined three physiologically and phylogenetically diverse species of selenate- and selenite-respiring bacteria, *Sulfurospirillum barnesii*, *Bacillus selenitireducens*, and *Selenihalanaerobacter shriftii*, for the occurrence of this phenomenon. When grown with **selenium** oxyanions as the electron acceptor, all of these organisms formed extracellular granules consisting of stable, uniform **nanospheres** (diameter, approx 300 nm) of Se(0) having monoclinic crystalline structures. Intracellular packets of Se(0) were also noted. The number of intracellular Se(0) packets could be reduced by first growing cells with nitrate as the electron acceptor and then adding selenite ions to washed suspensions of the nitrate-grown cells. This resulted in the formation of primarily extracellular Se **nanospheres**. After harvesting and cleansing of cellular debris, we observed large differences in the optical properties (UV-visible absorption and Raman spectra) of purified extracellular **nanospheres** produced in this manner by the three different bacterial species. The spectral properties in turn differed substantially from those of amorphous Se(0) formed by chemical oxidation of H₂Se and of black, vitreous Se(0) formed chemically by reduction of selenite with ascorbate. The microbial synthesis of Se(0) **nanospheres** results in unique, complex, compacted **nanosstructural** arrangements of Se atoms. These arrangements probably reflect a diversity of enzymes involved in the dissimilatory reduction that are subtly different in different microbes. Remarkably, these conditions cannot be achieved by current methods of chemical

synthesis.

3/7/25

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0014698651 BIOSIS NO.: 200400079408

Linked redox precipitation of sulfur and *****selenium***** under anaerobic conditions by sulfate-reducing bacterial biofilms.

AUTHOR: Hockin Simon L; Gadd Geoffrey M (Reprint)

AUTHOR ADDRESS: Division of Environmental and Applied Biology, School of Life Sciences, Biological Sciences Institute, University of Dundee, Dundee, DD1 4HN, UK**UK

AUTHOR E-MAIL ADDRESS: g.m.gadd@dundee.ac.uk

JOURNAL: Applied and Environmental Microbiology 69 (12): p7063-7072
December 2003 2003

MEDIUM: print

ISSN: 0099-2240 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: A biofilm-forming strain of sulfate-reducing bacteria (SRB), isolated from a naturally occurring mixed biofilm and identified by 16S rDNA analysis as a strain of *Desulfomicrobium norvegicum*, rapidly removed 200 μ M selenite from solution during growth on lactate and sulfate. Elemental *****selenium***** and elemental sulfur were precipitated outside SRB cells. Precipitation occurred by an abiotic reaction with bacterially generated sulfide. This appears to be a generalized ability among SRB, arising from dissimilatory sulfide biogenesis, and can take place under low redox conditions and in the dark. The reaction represents a new means for the deposition of elemental sulfur by SRB under such conditions. A combination of transmission electron microscopy, environmental scanning electron microscopy, and cryostage field emission scanning electron microscopy were used to reveal the hydrated nature of SRB biofilms and to investigate the location of deposited sulfur-*****selenium***** in relation to biofilm elements. When pregrown SRB biofilms were exposed to a selenite-containing medium, *****nanometer*****-sized *****selenium*****-sulfur granules were precipitated within the biofilm matrix. Selenite was therefore shown to pass through the biofilm matrix before reacting with bacterially generated sulfide. This constitutes an efficient method for the removal of toxic concentrations of selenite from solution. Implications for environmental cycling and the fate of sulfur and *****selenium***** are discussed, and a general model for the potential action of SRB in *****selenium***** transformations is presented.

3/7/26

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0014606887 BIOSIS NO.: 200300565606

Free radical scavenging efficiency of *****Nano*****-Se in vitro.

AUTHOR: Huang Bo; Zhang Jinsong; Hou Jingwu; Chen Chang (Reprint)

AUTHOR ADDRESS: Center for Molecular Biology, Institute of Biophysics, Chinese Academy of Sciences, 15 Datun Road, Beijing, China**China

AUTHOR E-MAIL ADDRESS: changchen@moon.ibp.ac.cn

JOURNAL: Free Radical Biology & Medicine 35 (7): p805-813 October 1, 2003
2003

MEDIUM: print

ISSN: 0891-5849 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: In this study, we showed that smaller size particles of *****Nano*****-Se have better scavenging effects on the following free radicals: carbon-centered free radicals (R.) generated from 2,2'-azo-bis-(2-amidinopropane) hydrochloride (AAPH), the relatively stable free radical 1,1-diphenyl-2-picrylhydrazyl (DPPH), the superoxide

anion (O₂·-) generated from the xanthine/xanthine oxidase (X/XO) system, singlet oxygen (O₂) generated by irradiated hemoporphyrin. Furthermore, the three sizes of **nanose** studied also show protective effects against the oxidation of DNA. The three samples all have potential size-dependent characteristics on scavenging the free radicals. Although in this study we regarded **nanose** as a whole without considering interactions between BSA and the red **selenium nanose**-particles, there is the possibility that the apparent free radical scavenging effects may be partially contributed by such interactions.

3/7/27

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0014573521 BIOSIS NO.: 200300528418

Effects of **nanose**-Ag particles loading on TiO₂ photocatalytic reduction of selenate ions.

AUTHOR: Tan T T Y; Yip C K; Beydoun D; Amal R (Reprint)

AUTHOR ADDRESS: Centre for Particle and Catalyst Technologies, School of Chemical Engineering and Industrial Chemistry, University of New South Wales, Sydney, NSW, 2052, Australia**Australia

AUTHOR E-MAIL ADDRESS: r.amal@unsw.edu.au

JOURNAL: Chemical Engineering Journal 95 (1-3): p179-186 15 September, 2003 2003

MEDIUM: print

ISSN: 1385-8947 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: The photocatalytic reduction of selenate Se(VI) ions was studied using unmodified TiO₂ and Ag-loaded TiO₂ (Ag-TiO₂) photocatalysts. In the presence of formic acid, both the TiO₂ and Ag-TiO₂ photocatalysts were effective in reducing Se(VI). The reaction proceeded through the reduction of Se(VI) ions to elemental **selenium** Se and then to hydrogen selenide gas (H₂Se). When unmodified TiO₂ photocatalyst was used, the Se formed from the reduction of Se(VI) was further reduced to Se²⁻ in the form of H₂Se upon the exhaustion of Se(VI) in solution. In the presence of the Ag-TiO₂ photocatalysts, hydrogen selenide gas was generated simultaneously with the reduction of Se(VI). It was found that the maximum Se(VI) reduction rate occurred at pH 3.5 and at a 0.5 at.% Ag loading while the maximum hydrogen selenide gas generation occurred at pH 3.5 and at 2.0 at.% Ag loading. The simultaneous reduction of Se(VI) to hydrogen selenide gas can be attributed to efficient charge separation due to the mediation of photogenerated electrons by the Ag particles. A mechanism is proposed in terms of the TiO₂-Ag-Se electronic interaction during UV irradiation.

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0014520724 BIOSIS NO.: 200300474679

Composition-tunable ZnxCd1-xSe **nanocrystals** with high luminescence and stability.

AUTHOR: Zhong Xinhua; Han Mingyong (Reprint); Dong Zhili; White Timothy J; Knoll Wolfgang (Reprint)

AUTHOR ADDRESS: Department of Materials Science, National University of Singapore, Singapore, 117543, Singapore**Singapore

AUTHOR E-MAIL ADDRESS: mashanmy@nus.edu.sg

JOURNAL: Journal of the American Chemical Society 125 (28): p8589-8594 July 16, 2003 2003

MEDIUM: print

ISSN: 0002-7863 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: High-quality ZnxCd1-xSe **nanocrystals** have been successfully

prepared at high temperature by incorporating stoichiometric amounts of Zn and Se into pre-prepared CdSe **nanocrystals**. With increasing Zn content, a composition-tunable emission across most of the visible spectrum has been demonstrated by a systematic blue-shift in emission wavelength. The photoluminescence (PL) properties for the obtained ZnxCd1-xSe **nanocrystals** (PL efficiency of 70-85%, fwhm=22-30 nm) are comparable to those for the best reported CdSe-based QDs. In particular, they also have good PL properties in the blue spectral range. Moreover, the alloy **nanocrystals** can retain their high luminescence (PL efficiency of over 40%) when dispersed in aqueous solutions and maintain a symmetric peak shape and spectral position under rigorous experimental conditions. A rapid alloying process was observed at a temperature higher than "alloying point". The mechanism of the high luminescence efficiency and stability of ZnxCd1-xSe **nanocrystals** is explored.

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0014341509 BIOSIS NO.: 200300299328

Cellular zinc and redox states converge in the metallothionein/thionein pair.

AUTHOR: Maret Wolfgang (Reprint)

AUTHOR ADDRESS: Center for Biochemical and Biophysical Sciences and Medicine, Harvard Medical School, Cambridge, MA, 02139, USA**USA

AUTHOR E-MAIL ADDRESS: wolfgangmaret@hms.harvard.edu

JOURNAL: Journal of Nutrition 133 (5S-I): p1460S-1462S May 2003 2003

MEDIUM: print

ISSN: 0022-3166 (ISSN print)

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: The paramount importance of zinc for a wide range of biological functions is based on its occurrence in thousands of known zinc proteins. To regulate the availability of zinc dynamically, eukaryotes have compartmentalized zinc and the metallothionein/thionein pair, which controls the pico- to **nanomolar** concentrations of metabolically active cellular zinc. Interactions of zinc with sulfur ligands of cysteines turn out to be critical both for tight binding and creation of a redox-active coordination environment from which the redox-inert zinc can be distributed. Biological oxidants such as disulfides and S-nitrosothiols oxidize the zinc/thiolate clusters in metallothionein with concomitant zinc release. In addition, **selenium** compounds that have the capacity to form selenol(ate)s catalytically couple with the glutathione/glutathione disulfide and metallothionein/thionein redox pairs to either release or bind zinc. In this pathway, **selenium** expresses its antioxidant effects through redox catalysis in zinc metabolism. **Selenium** affects the redox state of thionein, an endogenous chelating agent. With its 20 cysteines, thionein contributes significantly to the zinc- and thiol-redox-buffering capacity of the cell. Thus, hitherto unknown interactions between the essential micronutrients zinc and **selenium** on the one hand and zinc and redox metabolism on the other are key features of the cellular homeostatic zinc system.

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0014187140 BIOSIS NO.: 200300145859

Ordered **nanoparticle** arrays formed on engineered chaperonin protein templates.

AUTHOR: McMillan R Andrew (Reprint); Paavola Chad D; Howard Jeanie; Chan Suzanne L; Zaluzec Nestor J; Trent Jonathan D (Reprint)

AUTHOR ADDRESS: Center for Nanotechnology and Astrobiology Technology Branch, NASA Ames Research Center, Mail Stop 239-15, Moffett Field, CA, 94035, USA**USA

AUTHOR E-MAIL ADDRESS: amcmillan@mail.arc.nasa.gov;
jtrent@mail.arc.nasa.gov
JOURNAL: Nature Materials 1 (4): p247-252 December 2002 2002
MEDIUM: print
ISSN: 1476-1122 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Traditional methods for fabricating **nanoscale** arrays are usually based on lithographic techniques. Alternative new approaches rely on the use of **nanoscale** templates made of synthetic or biological materials. Some proteins, for example, have been used to form ordered two-dimensional arrays. Here, we fabricated **nanoscale** ordered arrays of metal and semiconductor quantum dots by binding preformed **nanoparticles** onto crystalline protein templates made from genetically engineered hollow double-ring structures called chaperonins. Using structural information as a guide, a thermostable recombinant chaperonin subunit was modified to assemble into chaperonins with either 3 nm or 9 nm apical pores surrounded by chemically reactive thiols. These engineered chaperonins were crystallized into two-dimensional templates up to 20 μm in diameter. The periodic solvent-exposed thiols within these crystalline templates were used to size-selectively bind and organize either gold (1.4, 5 or 10 nm) or CdSe-ZnS semiconductor (4.5 nm) quantum dots into arrays. The order within the arrays was defined by the lattice of the underlying protein crystal. By combining the self-assembling properties of chaperonins with mutations guided by structural modelling, we demonstrate that quantum dots can be manipulated using modified chaperonins and organized into arrays for use in next-generation electronic and photonic devices.

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0014175819 BIOSIS NO.: 200300134538
Separation and preconcentration of Se(IV)/Se(VI) species by selective adsorption onto **nanometer**-sized titanium dioxide and determination by graphite furnace atomic absorption spectrometry.
AUTHOR: Li Shunxing; Deng Nansheng (Reprint)
AUTHOR ADDRESS: Department of Environment Science, Wuhan University, Wuhan, 430072, China**China
AUTHOR E-MAIL ADDRESS: nsdeng@whu.edu.cn
JOURNAL: Analytical and Bioanalytical Chemistry 374 (7-8): p1341-1345
December 2002 2002
MEDIUM: print
ISSN: 1618-2642 _(ISSN print)
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A simple and sensitive method for the selective determination of Se(IV) and Se(VI) in natural water and sludge samples through an adsorptive process on a **nanometer**-sized TiO₂ (anatase) was developed. The conditions for quantitative and reproducible preconcentration, elution, and subsequent GFAAS determination were established. The proposed method gave a concentration factor of 50 for a 100 mL sample volume, characterized by high precision, high reproducibility, and direct determination of Se(IV)/Se(VI). The detection limits (3 σ , n=11) were 4.7 ng L⁻¹ for Se(IV) and 6.3 ng L⁻¹ for Se(VI); the precision (relative standard deviation) was 0.7% for Se(IV) and 0.9% for Se(VI) at the 0.5 μg L⁻¹ level.

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0014007992 BIOSIS NO.: 200200601503
Synthesis of hydrophilic ultrafine **nanoparticles** coordinated with

carbohydrate cluster
AUTHOR: Tamura Jun-ichi (Reprint); Fukuda Masumi; Tanaka Junko; Kawa Manabu
AUTHOR ADDRESS: Department of Environmental Sciences, Faculty of Education
and Regional Sciences, Tottori University, Tottori, 680-8551, Japan**
Japan
JOURNAL: Journal of Carbohydrate Chemistry 21 (5): p445-449 July, 2002
2002
MEDIUM: print
ISSN: 0732-8303
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A hydrophilic phosphine oxide (1) as a suitable ligand for
semiconductor ***nanoparticles*** was synthesized. The hydrophilicity of
the phosphine oxide was enhanced by introduction of three mannose
moieties to the end of the molecule via amide linkages. The ligand 1 was
able to coordinate to the CdSe/ZnS ***nanoparticle*** making the newly
formed hydrophilic complex.

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0014005704 BIOSIS NO.: 200200599215
Iodine and ***selenium*** contents in pumpkin (Cucurbita pepo L.) oil and
oil-cake
AUTHOR: Kreft Ivan (Reprint); Stibilj Vekoslava; Trkov Zdenka
AUTHOR ADDRESS: Biotechnical Faculty, University of Ljubljana, Jamnikarjeva
101, 1111, Ljubljana, Slovenia**Slovenia
JOURNAL: European Food Research and Technology 215 (4): p279-281 October,
2002 2002
MEDIUM: print
ISSN: 1438-2377
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The seeds, oil and oil-cake of the pumpkin (Cucurbita pepo L.)
with thin-husked seeds, grown in Slovenia, were analysed for iodine and
selenium contents using radiochemical neutron activation analysis.
Selenium determination was based on destruction by fusion of the
irradiated sample with Mg(NO3)2 as added carrier and HNO3; iodine
determination was based on combustion of the sample in a closed oxygen
atmosphere with an ashing aid and carrier, followed by double extraction
of I2 with CCl4, after the use of classical selective redox reactions
involving ***NaNO2*** and Na2SO3 in an acid medium. Pumpkin seeds were
found to contain 0.023-0.037 mg kg-1 of ***selenium***, and the oil-cake
0.034-0.047 mg kg-1 of ***selenium***. However, in the oil the
selenium content was below the detection limit (0.001 mg kg-1).
Pumpkin seeds contained 0.005-0.013 mg kg-1 of iodine, and the contents
in oil and oil-cake were 0.002-0.003 and 0.007-0.032 mg kg-1 of iodine,
respectively. Pumpkin oil may thus contain some iodine, but seems to be a
poor source of ***selenium***. In iodine and ***selenium*** deficient
areas pumpkin seed and oil-cake may be a moderate source of these dietary
trace elements.

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0013731845 BIOSIS NO.: 200200325356
Targeting cell surface receptors with ligand-conjugated ***nanocrystals***
AUTHOR: Rosenthal Sandra J (Reprint); Tomlinson Ian; Adkins Erika M;
Schroeter Sally; Adams Scott; Swafford Laura; McBride James; Wang
Yongqiang; DeFelice Louis J; Blakely Randy D
AUTHOR ADDRESS: Department of Chemistry, Vanderbilt University School of
Medicine, Vanderbilt University, Nashville, TN, 37235, USA**USA
JOURNAL: Journal of the American Chemical Society 124 (17): p4586-4594 May

1, 2002 2002
MEDIUM: print
ISSN: 0002-7863
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: To explore the potential for use of ligand-conjugated **nanocrystals** to target cell surface receptors, ion channels, and transporters, we explored the ability of serotonin-labeled CdSe **nanocrystals** (SNACs) to interact with antidepressant-sensitive, human and Drosophila serotonin transporters (hSERT, dSERT) expressed in HeLa and HEK-293 cells. Unlike unconjugated **nanocrystals**, SNACs were found to dose-dependently inhibit transport of radiolabeled serotonin by hSERT and dSERT, with an estimated half-maximal activity (EC50) of 33 (dSERT) and 99 μ M (hSERT). When serotonin was conjugated to the **nanocrystal** through a linker arm (LSNACs), the EC50 for hSERT was determined to be 115 μ M. Electrophysiology measurements indicated that LSNACs did not elicit currents from the serotonin-3 (5HT3) receptor but did produce currents when exposed to the transporter, which are similar to those elicited by antagonists. Moreover, fluorescent LSNACs were found to label SERT-transfected cells but did not label either nontransfected cells or transfected cells coincubated with the high-affinity SERT antagonist paroxetine. These findings support further consideration of ligand-conjugated **nanocrystals** as versatile probes of membrane proteins in living cells.

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0013448648 BIOSIS NO.: 200200042159
Biological effects of a **nanoredox** red elemental **selenite**
AUTHOR: Zhang Jin-Song; Gao Xue-Yun; Zhang Li-De; Bao Yong-Ping (Reprint)
AUTHOR ADDRESS: Institute of Food Research, Norwich, NR4 7UA, UK**UK
JOURNAL: Biofactors 15 (1): p27-38 2001 2001
MEDIUM: print
ISSN: 0951-6433
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A novel **selenite** form, **nanoredox** red elemental **selenite** (**nanoredox**-Se) was prepared by adding bovine serum albumin to the redox system of selenite and glutathione. **nanoredox**-Se has a 7-fold lower acute toxicity than sodium selenite in mice (LD50 113 and 15 mg Se/kg body weight respectively). In Se-deficient rat, both **nanoredox**-Se and selenite can increase tissue **selenite** and GPx activity. The biological activities of **nanoredox**-Se and selenite were compared in terms of cell proliferation, enzyme induction and protection against free radical-mediated damage in human hepatoma HepG2 cells. **nanoredox**-Se and selenite are similarly cell growth inhibited and stimulated synthesis of glutathione peroxidase (GPx), phospholipid hydroperoxidase glutathione peroxidase (PHGPx) and thioredoxin reductase (TR). When HepG2 cells were co-treated with **selenite** and glutathione, **nanoredox**-Se showed less pro-oxidative effects than selenite, as measured by cell growth. These results demonstrate that **nanoredox**-Se has a similar bioavailability in the rat and antioxidant effects on cells.

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0013381408 BIOSIS NO.: 200100553247
Atmospheric pressure chemical vapour deposition of **selenite** and tellurium films by UV laser photolysis of diethyl **selenite** and diethyl tellurium
AUTHOR: Pola Josef (Reprint); Bastl Zdenek; Subrt Jan; Ouchi Akihiko

AUTHOR ADDRESS: Laser Chemistry Group, Institute of Chemical Process
Fundamentals, Academy of Sciences of the Czech Republic, 165 02, Prague
6, Czech Republic**Czech Republic
JOURNAL: Applied Organometallic Chemistry 15 (11): p924-930 November, 2001
2001
MEDIUM: print
ISSN: 0268-2605
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Excimer laser-induced photolysis of gaseous diethyl
selenium and diethyl tellurium (C₂H₅)₂M (M=Se, Te) is controlled by
cleavage of both M-C bonds, it yields C₁-C₄ hydrocarbons (ethene as major
product) and results in chemical vapour deposition of ***selenium***
films and ***nanosized*** tellurium powder. The ***selenium*** and
tellurium properties were characterized by X-ray photoelectron
spectroscopy and Scanning electron Microscopy techniques.

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0012871755 BIOSIS NO.: 200100043594
Formation of sphalerite (ZnS) deposits in natural biofilms of
sulfate-reducing bacteria
AUTHOR: Labrenz Matthias; Druschel Gregory K; Thomsen-Ebert Tamara; Gilbert
Benjamin; Welch Susan A; Kemner Kenneth M; Logan Graham A; Summons Roger
E; De Stasio Gelsomina; Bond Philip L; Lai Barry; Kelly Shelly D;
Banfield Jillian F (Reprint)
AUTHOR ADDRESS: Department of Geology and Geophysics, University of
Wisconsin-Madison, 1215 West Dayton Street, Madison, WI, 53706, USA**USA
JOURNAL: Science (Washington D C) 290 (5497): p1744-1747 1 December, 2000
2000
MEDIUM: print
ISSN: 0036-8075
DOCUMENT TYPE: Article; Literature Review
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Abundant, micrometer-scale, spherical aggregates of 2- to 5-
nanometer-diameter sphalerite (ZnS) particles formed within natural
biofilms dominated by relatively aerotolerant sulfate-reducing bacteria
of the family Desulfobacteriaceae. The biofilm zinc concentration is
about 106 times that of associated groundwater (0.09 to 1.1 parts per
million zinc). Sphalerite also concentrates arsenic (0.01 weight %) and
selenium (0.004 weight %). The almost monomineralic product results
from buffering of sulfide concentrations at low values by sphalerite
precipitation. These results show how microbes control metal
concentrations in groundwater- and wetland-based remediation systems and
suggest biological routes for formation of some low-temperature ZnS
deposits.

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0012297193 BIOSIS NO.: 200000015506
Determination of dialkyldiselenides in water by gas chromatography-mass
spectrometry using 1-fluoro-2,4-dinitrobenzene as derivatization reagent
AUTHOR: Gomez-Ariza J L (Reprint); Pozas J A; Giraldez I; Morales E
AUTHOR ADDRESS: Departamento de Quimica y Ciencia de los Materiales,
Escuela Politecnica Superior, Universidad de Huelva, La Rabida, Huelva,
Spain**Spain
JOURNAL: Journal of Chromatographic Science 37 (11): p436-442 Nov., 1999
1999
MEDIUM: print
ISSN: 0021-9665
DOCUMENT TYPE: Article

RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The feasibility of gas chromatography-mass spectrometry for the speciation of traces of dialkyldiselenides in the presence of dialkylselenides and inorganic **selenium** species is described, and the procedure is applied to environmental samples. The analysis is based on the reaction of dialkyldiselenide species with 1-fluoro-2,4-dinitrobenzene after volatilization of **selenium** species as alkylselenols using a volatilization and trap device. Parameters affecting the volatilization and derivatization of the **selenium** compounds are discussed, and the performance of the method is described. The approach reaches detection limits in the order of **nanograms** (after a preconcentration step) and has been applied to the analysis of dimethyldiselenium and diethyldiselenium in natural waters.

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0011935141 BIOSIS NO.: 199900194801
Inhibitory sites in enzymes: Zinc removal and reactivation by thionein
AUTHOR: Maret Wolfgang; Jacob Claus; Vallee Bert L (Reprint); Fischer Edmond H
AUTHOR ADDRESS: Center for Biochemical and Biophysical Sciences and Medicine, Harvard Medical School, 250 Longwood Avenue, Seeley G. Mudd Building, Boston, MA, 02115, USA**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United States of America 96 (5): p1936-1940 March 2, 1999 1999
MEDIUM: print
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Thionein (T) has not been isolated previously from biological material. However, it is generated transiently in situ by removal of zinc from metallothionein under oxidoreductive conditions, particularly in the presence of **selenium** compounds. T very rapidly activates a group of enzymes in which zinc is bound at an inhibitory site. The reaction is selective, as is apparent from the fact that T does not remove zinc from the catalytic sites of zinc metalloenzymes. T instantaneously reverses the zinc inhibition with a stoichiometry commensurate with its known capacity to bind seven zinc atoms in the form of clusters in metallothionein. The zinc inhibition is much more pronounced than was previously reported, with dissociation constants in the low **nanomolar** range. Thus, T is an effective, endogenous chelating agent, suggesting the existence of a hitherto unknown and unrecognized biological regulatory system. T removes the metal from an inhibitory zinc-specific enzymatic site with a resultant marked increase of activity. The potential significance of this system is supported by the demonstration of its operations in enzymes involved in glycolysis and signal transduction.

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0011872258 BIOSIS NO.: 199900131918
Sorption and diffusion behaviour of **selenium** in tuff
AUTHOR: Tachi Y (Reprint); Shibutani T; Sato H; Yui M
AUTHOR ADDRESS: Power Reactor Nuclear Fuel Dev. Corp., Tokai Works, 4-33 Muramatsu, Tokai-mura, Ibaraki-ken 319-11, Japan**Japan
JOURNAL: Journal of Contaminant Hydrology 35 (1-3): p77-89 Dec. 15, 1998 1998
MEDIUM: print
ISSN: 0169-7722
DOCUMENT TYPE: Article

RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Sorption and diffusion behavior of Se in tuff was studied by batch sorption and through-diffusion experiments. Tuff samples used in the experiments were obtained from the Toki Lignite-Bearing Formation, Tono area, Gifu, central Japan. The experiments were carried out in a nitrogen glove-box with an oxygen level less than 1 ppm at room temperature. Batch sorption experiments of Se on crushed tuff samples and its constituent minerals were carried out in the pH range between 2 and 13. The fraction of Se sorbed on tuff was above 90% in the pH range below 8 and decreased to below 30% with increasing pH. Comparison of pH dependencies of sorption between tuff and its constituent minerals suggested that Fe minerals such as Fe-oxyhydroxide and pyrite contributed to Se sorption on tuff. Through-diffusion experiments of Se through intact tuff samples were carried out at the pH values of 8 and 11. Effective diffusion coefficients obtained at both pH values were almost the same, on the other hand, the distribution coefficient obtained at pH 8 was higher than that at pH 11 by one order of magnitude. This result was consistent qualitatively with the pH dependency of Se sorption by the batch experiments. However, the distribution coefficients obtained by the diffusion experiments were lower than those by the batch experiments and the differences were one order of magnitude. Correcting the difference of specific surface areas for crushed and intact tuff samples could not explain the difference between distribution coefficients obtained by batch sorption and diffusion experiments. Consideration of the pore size distribution by the mercury porosimetry suggested that the microscopic pores with size below several tens of μm might contribute slightly to sorption. The assumption that the pores with size below 20 nm are not concerned with sorption leads to the consistency of distribution coefficients between batch sorption and diffusion experiments.

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0011502523 BIOSIS NO.: 199800296770
Speciation of μg selenium in natural waters and snow by DPCSV at the hanging mercury drop electrode
AUTHOR: Papoff P (Reprint); Bocci F; Lanza F
AUTHOR ADDRESS: Dep. Chim. Chim. Ind., Via Risorgimento 35, 56126 Pisa, Italy**Italy
JOURNAL: Microchemical Journal 59 (1): p50-76 May, 1998 1998
MEDIUM: print
ISSN: 0026-265X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A procedure is described for the speciation of μg selenium in natural waters. According to this procedure the original concentrations of Se(IV), Se(IV) + Se(VI), and Se(IV) + Se(-II) in the sample can be determined in turn. Differential pulse cathodic stripping voltammetry (DPCSV) was used according to the method proposed by U. Baltensperger and J. Hertz (Anal. Chim. Acta, 1985, 172, 49-56) to measure the concentration of Se(IV), the only electrochemically active species. By properly selecting pH and reagent concentrations, the following reaction steps were accomplished under UV irradiation: (i) decomposition of organic compounds that are generally present in natural waters and hinder the DPCSV determination of Se(IV) (pH around 1.6, 50 μmol of 30% H_2O_2 in a 60-ml sample); (ii) quantitative reduction of Se(VI) to Se(IV) at pH 10; (iii) quantitative oxidation of Se(-II) compounds and organic interferences to Se(IV) in the presence of H_2O_2 (50 μmol was added to a 60-ml sample 2 mM in $\text{Na}_2\text{B}_4\text{O}_7$). Various tests were performed in natural and synthetic seawater samples. In step 1, spikes of humic acid (up to 20 mg liter⁻¹), benzene (80 μg liter⁻¹), and Triton X-100 (10 mg liter⁻¹) were completely destroyed in 30 or 100 min depending on the irradiating device used. Trimethylselenonium ion and DL-selenomethionine, representative of selenocompounds in natural waters, also did not oxidize to Se(IV) at the μg per liter level. In step 2, no losses in

Se(IV) spikes were observed after irradiation at pH 10, which means that Se(VI) reduction does not proceed toward oxidation states tower than +4. In step 3, spikes of standard solutions of trimethylselenonium and DL-selenomethionine were completely recovered as Se(IV), whereas Se(IV) spikes were not lost during the reaction step. Compared with other procedures reported in the literature, the present procedure requires a lower UV absorbed power per sample, a shorter time of irradiation, and a lower reagent concentration. This, in addition to the use of a 16-bit ADC sampling board and a suitable data processing program, allowed a Se(IV) concentration of 0.16 ng liter⁻¹ to be measured with an overall coefficient of variation as low as 16 (among parallel samples). Two different irradiation devices are described.

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0011235158 BIOSIS NO.: 199800029405

Effect of doxazosin on endothelial dysfunction in
hypercholesterolemic/antioxidant-deficient rats

AUTHOR: Raij Leopoldo (Reprint); Hayakawa Hiroshi; Coffee Karen; Guerra
Janeth

AUTHOR ADDRESS: Renal Sect. 111J, Veterans Affairs Med. Center, One
Veterans Drive, Minneapolis, MN 55417, USA**USA

JOURNAL: American Journal of Hypertension 10 (11): p1257-1262 Nov., 1997
1997

MEDIUM: print

ISSN: 0895-7061

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Hypertension, hypercholesterolemia, atherosclerosis, and coronary heart disease are associated with abnormal endothelium-dependent, nitric oxide-mediated vasorelaxation. In rats, hypercholesterolemia in combination with deficiencies of vitamin E and ~~\$\$\$selenium\$\$\$~~ results in increased endogenous lipid oxidation and endothelial dysfunction. Two hydroxymetabolites of doxazosin, an α -adrenergic blocking antihypertensive agent, inhibit human lipid oxidation in vitro in a dose-dependent fashion. The present studies were performed to determine the effect of in vivo treatment with doxazosin on endothelial dysfunction in hypercholesterolemic/antioxidant-deficient rats. Dahl rats were fed 1) a standard diet, 2) a high cholesterol (4%) diet, or 3) a high cholesterol, vitamin E- and ~~\$\$\$selenium\$\$\$~~-deficient diet. A subgroup of animals in each group were administered doxazosin (3.5 mg/100 g/day) for 16 weeks. In the aortas, vascular relaxations induced by acetylcholine were significantly decreased ($P < .05$) in high cholesterol/antioxidant-deficient rats compared with normal and high cholesterol animals. Doxazosin treatment prevented the impairment in endothelium-dependent vascular relaxation in the high cholesterol/antioxidant-deficient group. Vasorelaxation in response to the exogenous nitric oxide donor diethylamine ~~\$\$\$nanoate\$\$\$~~, which was significantly impaired ($P < .05$) in aortas from high cholesterol/antioxidant-deficient animals compared with normal and high cholesterol animals, was normalized in aortas from high cholesterol/antioxidant-deficient animals that had received doxazosin. The antioxidant effect of doxazosin may have therapeutic implications in diseases associated with endothelial dysfunction linked to products of lipid oxidation.

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0010476436 BIOSIS NO.: 199699110496

Applicability of neutron activation analysis (NAA) in quantitative
determination of some essential and toxic trace elements in food articles

AUTHOR: Dermelj Marjan (Reprint); Stibilj Vekoslava; Byrne Anthony R;
Slejkovec Ljudmila Benedik Zdenka; Jacimovic Radojko

AUTHOR ADDRESS: "J. Stefan" Inst., Jamova 39, SL-1000 Ljubljana, Slovenia**
Slovenia
JOURNAL: Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung 202 (6
): p447-450 1996 1996
ISSN: 0044-3026
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Accurate and reliable data on microgram and **nanogram** quantities of some essential and toxic elements in most food articles are very scarce. Neutron activation analysis (NAA), with its essentially blank-free advantage, is a valuable approach in the field of determination of trace elements in different foodstuffs and diets. Accordingly, various radiochemical (RNAA) and instrumental (INAA) approaches have been developed in our laboratory for the elements As, Cd, Co, Cu, Hg, I, Mo, Ni, Sb, Se, Sri, Th, U, V, and others, and verified by the analysis of compositionally appropriate certified reference materials.

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0010403442 BIOSIS NO.: 199699037502
Crystal structure of the rat liver fructose-2,6-bisphosphatase based on selenomethionine multiwavelength anomalous dispersion phases
AUTHOR: Lee Yong-Hwan; Ogata Craig; Pflugrath James W; Levitt David G; Sarma Ragupathy; Banaszak Leonard J (Reprint); Pilkis Simon J
AUTHOR ADDRESS: Dep. Biochem., Univ. Minn., 435 Delaware St. SE, Minneapolis, MN 55455, USA**USA
JOURNAL: Biochemistry 35 (19): p6010-6019 1996 1996
ISSN: 0006-2960
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The crystal structure of the recombinant fructose-2,6-bisphosphatase domain, which covers the residues between 251 and 440 of the rat liver bifunctional enzyme, 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase, was determined by multiwavelength anomalous dispersion phasing and refined at 2.5 Å resolution. The selenomethionine-substituted protein was induced in the methionine auxotroph, *Escherichia coli* DL41DE3, purified, and crystallized in a manner similar to that of the native protein. Phase information was calculated using the multiwavelength anomalous dispersion data collected at the X-ray wavelengths near the absorption edge of the K-shell alpha electrons of **selenium**. The fructose-2,6-bisphosphatase domain has a core alpha/beta structure which consists of six stacked beta-strands, four parallel and two antiparallel. The core beta-sheet is surrounded by nine alpha-helices. The catalytic site, as defined by a bound phosphate ion, is positioned near the C-terminal end of the beta-sheet and close to the N-terminal end of an alpha-helix. The active site pocket is funnel-shaped. The narrow opening of the funnel is wide enough for a water molecule to pass. The key catalytic residues, including His7, His141, and Glu76, are near each other at the active site and probably function as general acids and/or bases during a catalytic cycle. The inorganic phosphate molecule is bound to an anion trap formed by Arg6, His7, Arg56, and His141. The core structure of the Fru-2,6-P-2ase is similar to that of the yeast phosphoglycerate mutase and the rat prostatic acid phosphatase. However, the structure of one of the loops near the active site is completely different from the other family members, perhaps reflecting functional differences and the **nanomolar** range affinity of Fru-2,6-P-2ase for its substrate. The imidazole rings of the two key catalytic residues, His7 and His141, are not parallel as in the yeast phosphoglycerate mutase. The crystal structure is used to interpret the existing chemical data already available for the bisphosphatase domain. In addition, the crystal structure is compared with two other proteins that belong to the histidine phosphatase family.

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0009485680 BIOSIS NO.: 199497506965

Capillarity and wetting of carbon **nanotubes**

AUTHOR: Dujardin E; Ebbesen T W (Reprint); Hiura H; Tanigaki K

AUTHOR ADDRESS: NEC Res. Inst., 4 Independence Way, Princeton, NJ 08540,
USA**USA

JOURNAL: Science (Washington D C) 265 (5180): p1850-1852 1994 1994

ISSN: 0036-8075

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: The wetting and capillarity of carbon **nanotubes** were studied in detail here. **Nanotubes** are not "super-straws," although they can be wet and filled by substances having low surface tension, such as sulfur, **selenium**, and cesium, with an upper limit to this tension less than 200 millinewtons per meter. This limit implies that typical pure metals will not be drawn into the inner cavity of **nanotubes** through capillarity, whereas water and organic solvents will. These results have important implications for the further use of carbon **nanotubes** in experiments on a **nanometer** scale.

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0009424989 BIOSIS NO.: 199497446274

Measurements of blood flow and xanthine oxidase activity during postischemic reperfusion of the large colon of ponies

AUTHOR: Wilkins Pamela Anne (Reprint); Ducharme Normand G; Lowe John E; Schwark Wayne S; Meschter Carol; Erb Hollis N

AUTHOR ADDRESS: Dep. Physiol., Coll. Vet. Med., Cornell Univ., Ithaca, NY 14853, USA**USA

JOURNAL: American Journal of Veterinary Research 55 (8): p1168-1177 1994 1994

ISSN: 0002-9645

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: To assess right colic artery blood flow and relevance of xanthine dehydrogenase/xanthine oxidase after experimentally induced strangulation obstruction and reperfusion of the colon, 5 ponies were subjected to 2.5 hours of complete ischemia of the left dorsal and ventral colons, allowed to recover from surgery, and monitored during a 48-hour reperfusion period. Five ponies were subjected to sham surgery and served as controls. All ponies had a Doppler ultrasound blood flow monitor implanted on the right colic artery near the pelvic flexure 10 to 14 days prior to the ischemic period. Colic artery blood flow was monitored prior to, during, and for 4 hours after surgery. Blood samples from the right colic artery and vein distal to the obstruction site were collected during surgery (prior to ischemia, after 1 and 2 hours of ischemia, and after 10 and 60 minutes of reperfusion) for determination of arterial and venous blood gas tensions and electrolytes. Prior to surgery, blood **selenium** and plasma vitamin E (alpha-tocopherol) concentrations and blood glutathione peroxidase (GPX) activity were determined to assess the status of endogenous antioxidants. Combined xanthine dehydrogenase (XDH) plus xanthine oxidase (XO) activity, and XO activity alone (**nanomoles** per minute per gram of tissue) were determined, using a dual-spectrophotometric technique. Xanthine dehydrogenase and oxidase activities were determined prior to ischemia, after 1 and 2 hours of ischemia, and at 1 and 48 hours after reperfusion. Median blood flow in the experimental and control groups (156 ml/min and 110 ml/min, respectively) was not statistically different before surgery, and was significantly (P lt 0.02) lower in the experimental (4 ml/min) vs the

control group (72.5 ml/min) during the ischemic period. Experimental ponies had significantly ($P < 0.03$) lower right colic artery blood flow during the 4 hours immediately after recovery from anesthesia. Significant difference was not observed in right colonic venous bicarbonate concentration between groups at any time. Median right colonic venous P-co-2, pH, and standard base excess were different ($P < 0.001$) between groups during the ischemic period only. Median venous oxygen saturation and median venous P-o-2 were significantly ($P < 0.001$) lower in the experimental ponies at the end of 2 hours of ischemia, but were significantly ($P < 0.05$) increased during the reperfusion phase. Median venous potassium concentration was significantly ($P < 0.01$) higher in experimental ponies during the ischemic and reperfusion phases. Vitamin E and GPX values were within normal limits for all ponies. Median **\$\$\$selenium\$\$\$** concentration was $< 15 \mu\text{g/dl}$; however, there were no significant differences between control and experimental ponies. Only 3 of 10 ponies had measurable XDH/XO activity at the beginning of the experiment. Enzyme activity was detected in 1 additional pony during the ischemic period. However, in all 4 ponies in which XDH/XO activity was detected, enzyme activity was low (10 to 36 nmol/min/g). On the basis of macroscopic and histologic examination of the large colon, evidence of reperfusion injury was not found in 4 of the 5 experimental ponies. The only pony with gross evidence of reperfusion injury did not have detectable XO activity. Results of the study indicate that hypoperfusion of the colon during the postischemic period may be a factor in deterioration of the colon observed clinically in equids with surgical correction of large-colon volvulus. Additionally, if reperfusion injury develops in the large colon, it probably is not mediated through the xanthine oxidase enzyme system: the activity of this enzyme in the large colon, when present, is negligible.

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0009176728 BIOSIS NO.: 199497198013

Determination of total **\$\$\$selenium\$\$\$** and dissolved **\$\$\$selenium\$\$\$** species in natural waters by fluorometry

AUTHOR: Wang Dacheng (Reprint); Alfthan Georg; Aro Antti

AUTHOR ADDRESS: Dep. Nutrition, National Public Health Institute, Mannerheimintie 166, SF-00300 Helsinki, Finland**Finland

JOURNAL: Environmental Science and Technology 28 (3): p383-387 1994 1994

ISSN: 0013-936X

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: A method for the determination of total **\$\$\$selenium\$\$\$** and dissolved **\$\$\$selenium\$\$\$** species at **\$\$\$nanogram\$\$\$** levels in natural water samples was developed. Selenite and selenate were separated through a Dowex AG2-X8 column, and dissolved hydrophobic base, acidic, and neutral organic **\$\$\$selenium\$\$\$** were separated by an XAD-8 column. The elution of a water sample of 50-200 mL with nitric acid addition (2.5 mL/L) was evaporated on an electric plate and digested with $\text{HNO}_3/\text{HClO}_4$ (2/1, v/v). After being reduced with HCl and complexed with 2,3-diaminonaphthalene, the fluorophore was extracted into cyclohexane, and its fluorescence was measured. The recovery of **\$\$\$selenium\$\$\$** added to 50 mL of river water was 97.9-104%, with an average of 99.9% ($n = 20$). The detection limit of the method for water total **\$\$\$selenium\$\$\$** was 0.35 ng of **\$\$\$selenium\$\$\$** (blank + 2 SD), and the precision of the method for natural water samples with **\$\$\$selenium\$\$\$** concentrations ranging from 28 to 115 ng/L was 2.1%. For individual dissolved **\$\$\$selenium\$\$\$** species, the detection limits were all lower than 1.8 ng.

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0009017178 BIOSIS NO.: 199497038463

Selenite and selenate quantification by hydride generation-atomic

absorption spectrometry, ion chromatography, and colorimetry
AUTHOR: Blaylock Michael J (Reprint); James Bruce R
AUTHOR ADDRESS: Dep. Plant, Soil, and Insect Sci., P.O. Box 3354, Univ.
Wyoming, Laramie, WY 82071-3354, USA**USA
JOURNAL: Journal of Environmental Quality 22 (4): p851-857 1993 1993
ISSN: 0047-2425
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The need for a routine, inexpensive method with **nanomolar** detection limits for soluble SeO-3-2- and SeO-4-2- is increasing as Se research on soil-plant-water systems intensifies and speciation of Se valence states is required. This study was undertaken to compare hydride generation-atomic absorption spectrometry (HGAAS), colorimetry using 2,3-diaminonaphthalene (DAN), and ion chromatography (IC) as suitable methods for analysis of SeO-3-2- and SeO-4-2- in soil extracts and water samples. **Selenium** standards in solutions of either 1.0 mM KH-2PO-4, CaSO-4, and KNO-3, or in distilled water were analyzed to determine detection limits (DL), limits of quantitation (LOQ), and practicality for routine use of the above methods. A 0.1 mM K-2HPO-4/KH-2PO-4 soil extract spiked with 2.0 or 20 μ M SeO-3-2- and SeO-4-2- was also used to compare the precision of the three methods. The HGAAS method was the most sensitive (0.212 absorbance units/ μ M) and had the lowest DL for SeO-3-2- (0.03 μ -mol Se/L) of the three methods employed. Detection limits for the DAN and IC methods were significantly higher (18 and 0.24 μ -mol Se/L, respectively). Poor reproducibility between methods was obtained for SeO-4-2- content of the soil extract containing 20 μ M SeO-4-2-, with concentrations ranging from 9.1 \pm 1.2 μ -mol/L determined by HGAAS to 24.6 \pm 0.05 μ -mol/L by IC. The variability and poor recovery of SeO-4-2- was due to variability in efficiency of the HCl reduction required to reduce SeO-4-2- to SeO-3-2- before analysis in the HGAAS and DAN procedures. **Selenium** determinations in samples where low detection limits ($<$ 0.1 μ M are required are most effectively accomplished with HGAAS. Colorimetry requires greater effort and time from the analyst to obtain the low detection limits of HGAAS, but is useful in that only a visible light spectrometer is required. Ion chromatography is capable of automated determinations of SeO-3-2- and SeO-4-2- directly in combination with other ions of interest and may be appropriate for soil solution Se analysis where Se speciation is required.

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0008953276 BIOSIS NO.: 199396117692
Quantification of the solvent effects on the triplet quantum yield of psoralen by the "linear solvation energy relationship"
AUTHOR: Sa E Melo Teresa (Reprint); Bazin Marc; Ronfard-Haret Jean-Claude; Santus Rene
AUTHOR ADDRESS: Centro de Quimica Mol., INIC, Inst. Superior Tecnico, 1096 Lisboa Codex, Portugal**Portugal
JOURNAL: Photochemistry and Photobiology 58 (1): p19-27 1993
ISSN: 0031-8655
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Triplet formation quantum yields (PHI-T) of psoralen in a set of 17 pure solvents ranging from n-hexane to water and in dioxane:water mixtures were obtained by **nanosecond** laser flash photolysis. The triplet yield increases with solvent polarity. The extremum values are 0.009 and 0.545 in n-hexane and water, respectively. Good correlations of the experimental PHI-T values with empirical "polarity" scales (Dimroth/Reichardt's E-T (30), Kamlet/Taft's solvatochromic parameters π^* , β , and α , and Swains acidity/basicity A-s/B-s) were obtained: $\ln(\text{vphi-T-1}) = 8.86 - 0.143\text{E-T}(30)$, $\ln(\text{vphi-T-1}) = 4.40 - 2.34 \pi^* - 1.70\alpha$ and $\ln(\text{vphi-T-1}) = 4.65 - 3.72\text{A-s} - 1.12\text{B-s}$. The results are discussed in terms of the sensitivity of psoralen triplet quantum

yield to solvent polarity and hydrogen-bonding abilities.

3/7/50

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0008944400 BIOSIS NO.: 199396108816
Effects of kappa-selenocarrageenan on heart glutathione peroxidase in rats
AUTHOR: Li Duan (Reprint); Han Qun (Reprint); Yang Xiang-Yuan (Reprint);
Chen Bai-Jin (Reprint); Lin Zheng-Jie
AUTHOR ADDRESS: Dep. Pharmacol., Sch. Pharm., Shanghai Med. Univ.,
Shanghai, china**china
JOURNAL: Acta Academiae Medicinae Shanghai 20 (3): p166-169 1993
ISSN: 0257-8131
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: Chinese

ABSTRACT: Effects of Kappa-selenocarrageenan, an organic compound containing ^{75}Se , on heart glutathione peroxidase (GSH-px) were studied in rats. Eight groups of Wistar rats were fed Se-deficient or Se-supplemented diets for 54d. After 52d, 4 groups of them were treated with $100\text{ mg cntdot kg}^{-1}$ NaNO_2 twice daily for 3d. Results revealed in comparison with Se-deficient group the heart GSH-px activity was significantly elevated from 48.6 ± 17.5 to 127.0 ± 34.9 , 136.0 ± 25.2 and 138.0 ± 52.9 u/mg protein respectively in all Se-supplemented groups including sodium selenite (0.05 ppm Se), Kappa-selenocarrageenan (0.05 ppm Se and 0.5 ppm Se) from 24.1 ± 8.3 to 99.2 ± 18.8 , 101.3 ± 9.8 , 108.0 ± 17.6 u/mg protein respectively in groups treated by NaNO_2 . However, no significant difference was observed between Se-supplemented groups.

3/7/51

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0008880711 BIOSIS NO.: 199396045127
Analytical related problems in metal and trace elements determination in industrial waste landfill leachates
AUTHOR: Gallorini M (Reprint); Pesavento M; Profumo A; Riolo C
AUTHOR ADDRESS: CNR, Centro Radiochimica, Analisi per Attivazione Neutronica, V. le Taramelli 12.27100, Pavia, Italy**Italy
JOURNAL: Science of the Total Environment 133 (3): p285-298 1993
ISSN: 0048-9697
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: The periodic analytical control of waste landfill leachate is of fundamental importance not only to check the presence of possible toxic substances, but also to assess changes in concentration levels and behaviour with time. This work identifies some of the difficulties which arise during the analysis of some heavy metals and trace elements in leachate samples from a controlled industrial wastes landfill located in north Italy. The analytical problems encountered using both electro-thermal atomic absorption spectroscopy (ETAAS) and neutron activation analysis (NAA) for the determination of a series of elements, Cu, Cd, Pb, Ni, Mn, V, As, Se, Sb, Th, Sn, Cs, W, Cr, with concentration often at nanogram levels, are presented and evaluated. To solve these problems two selective chemical procedures have been developed to separate and to eliminate the matrix interfering compounds or elements (i.e., organic matter, complexing agents, Cl^- , Br^- , S^{2-} , Na^+) which reduce and in some cases impair the sensitivity of the technique. For the analyses by ETAAS a preliminary preconcentration and separation procedure, based on the ion exchange resin Chelex-100 has been developed to determine Pb, Cd, Co, Cu, Ni and Sn. In the case of NAA a specific radiochemical separation had to be studied for the analysis of Sn, V, W, Mn, Cr, As, Sb, Se, Th in presence of high bromine and sodium concentrations. Procedures blanks and yields have been controlled and

evaluated and quality assurance measurements have been carried out analyzing, with the proposed methods, standard reference materials from BCR and NIST. Furthermore, different mineralization procedures using both microwave and Teflon bomb have been compared and evaluated.

3/7/52

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0008240653 BIOSIS NO.: 199293083544
EFFECT OF SODIUM NITRITE ON MYOCARDIAL GLUTATHIONE PEROXIDASE AND
PROTECTIVE ACTION OF VITAMIN E AND ***SELENIUM***
AUTHOR: YANG Q (Reprint); WANG F
AUTHOR ADDRESS: INSTITUTE OF ENDEMIC DIS, NORMAN BETHUNE UNIVERSITY MEDICAL
SCI, 6 ST XINMIN, CHANGCHUN, JILIN 130021, PR CHINA**CHINA
JOURNAL: Biomedical and Environmental Sciences 4 (4): p373-375 1991
ISSN: 0895-3988
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Under the condition of acute ***NaNO2*** poisoning, the changes of myocardial GSH-Px activity of rats fed a diet composed of grains grown in the endemic region of Keshan disease and the same diet with supplementation of vitamin E or ***selenium*** were investigated. By gavage of toxic doses of ***NaNO2***, the myocardial GSH-Px was significantly reduced ($P < 0.05$). Vitamin E or ***selenium*** supplementation protected the enzyme activity from reducing. It is suggested that the simultaneous action of an increase in ***selenium*** and vitamin E intake and a decrease in nitrite intake might greatly prevent the occurrence of Keshan disease.

3/7/53

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0005685648 BIOSIS NO.: 198784039797
REDUCTION OF SELENATE TO SELENIDE BY SULFATE-RESPIRING BACTERIA EXPERIMENTS
WITH CELL SUSPENSIONS AND ESTUARINE SEDIMENTS
AUTHOR: ZEHR J P (Reprint); OREMLAND R S
AUTHOR ADDRESS: US GEOL SURVEY, MENLO PARK, CA 94025, USA**USA
JOURNAL: Applied and Environmental Microbiology 53 (6): p1365-1369 1987
ISSN: 0099-2240
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Washed cell suspensions of *Desulfovibrio desulfuricans* subsp. *aestuarii* were capable of reducing ***nanomolar*** levels of selenate to selenide as well as sulfate to sulfide. Reduction of these species was inhibited by 1 mM selenate or tungstate. The addition of 1 mM sulfate decreased the reduction of selenate and enhanced the reduction of sulfate. Increasing concentrations of sulfate inhibited rates of selenate reduction but enhanced sulfate reduction rates. Cell suspensions kept in 1 mM selenate were incapable of reducing either selenate or sulfate when the selenate/sulfate ratio was ≥ 0.02 , indicating that irreversible inhibition occurs at high selenate concentrations. Anoxic estuarine sediments having an active flora of sulfate-respiring bacteria were capable of a small amount of selenate reduction when ambient sulfate concentrations were low (< 4 mM). These results indicate that sulfate is an inhibitor of the reduction of trace quantities of selenate. Therefore, direct reduction of traces of selenate to selenide by sulfate-respiring bacteria in natural environments is constrained by the ambient concentration of sulfate ions. The significance of this observation with regard to the role sediments play in sequestering ***selenium*** is discussed.

3/7/54

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0005590970 BIOSIS NO.: 198783069861
RELIABLE DETERMINATION OF ELEMENTAL TRACES IN THE *****NANOGRAM*****-GRAM RANGE
IN BIOTIC MATERIALS AND IN COAL BY INVERSE VOLTAMMETRY AND ATOMIC
ABSORPTION SPECTROMETRY AFTER COMBUSTION OF THE SAMPLE IN A STREAM OF
OXYGEN
AUTHOR: KAISER G (Reprint); TOELG G
AUTHOR ADDRESS: MAX-PLANCK-INST FUER METALLFORSCHUNG, INST FUER
WERKSTOFFWISSENSCHAFTEN, LAB FUER REINSTSTOFFANALYTIK,
BUNSEN-KIRCHHOFF-STR 13, D-4600 DORTMUND 1, FRG**WEST GERMANY
JOURNAL: Fresenius Zeitschrift fuer Analytische Chemie 325 (1): p32-40
1986
ISSN: 0016-1152
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Copper, zinc, *****selenium*****, cadmium, tellurium, thallium, lead,
and bismuth were determined in biotic matrices and in various coal
samples after combustion in a stream of oxygen and dissolution of the
volatilized elements and/or residue in 1 to 2 ml of a high-purity acid by
differential pulse anodic and/or cathodic stripping voltammetry from the
same decomposition solution with only a few chemical adjustments. With
the exception of zinc all elements can be volatilized from the sample as
oxides or halides upon admixture with cellulose/magnesium chloride, and
can thus easily be dissolved. The detection limits for Se, Te, Tl, and Bi
were found to be 1 ng/g, 0.5 ng/g, 1 ng/g, and 2 ng/g, respectively. For
Cu, Zn, Cd, Pb the detection limit was limited by the blank value and lay
in the low ng/g range. The results were in good agreement with those
obtained by atomic absorption spectrometry after both wet decomposition
and combustion.

3/7/55

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0005543456 BIOSIS NO.: 198783022347
DETERMINATION OF *****SELENIUM***** AND TELLURIUM IN THE GAS PHASE USING
SPECIFIC COLUMNS AND ATOMIC ABSORPTION SPECTROMETRY
AUTHOR: MUANGNOICHAROEN S (Reprint); CHIOU K Y; MANUEL O K
AUTHOR ADDRESS: CHEM DEP, UNIV MISSOURI, ROLLA, MO 65401, USA**USA
JOURNAL: Analytical Chemistry 58 (13): p2811-2813 1986
ISSN: 0003-2700
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Total *****selenium***** and tellurium in the gas phase were analyzed
after adsorption on gold-coated beads and charcoal. The thermally eluting
gas was trapped on columns filled with quartz beads that were cooled in
an ice bath. The beads were boiled in dilute HCl, and the resulting
solution was analyzed for Se and Te by graphite furnace atomic absorption
spectrometry. Our results demonstrate that gold-coated beads efficiently
trap gaseous Se and Te at a low gas flow rate, but at higher flow rates
charcoal traps are more expedient. With charcoal traps, it was found that
local air samples contain Se in the range of 0.92-3.05 ng m⁻³ and Te in
the range of 0.10-0.34 ng m⁻³. Detection limits down to about 0.1 ng m⁻³
allow the ready detection of Se and Te in rural air with a precision of
about $\pm 6\%$ at the *****nanogram***** level of Te and about $\pm 4\%$ at the
*****nanogram***** level of Se.

3/7/56

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0005242628 BIOSIS NO.: 198682089015
FLUOROMETRY OF *****NANOGRAM***** AMOUNTS OF *****SELENIUM***** IN BIOLOGICAL

SAMPLES

AUTHOR: TAMARI Y (Reprint); OHMORI S; HIRAKI K
AUTHOR ADDRESS: DEP CHEM, FAC SCI, KONAN UNIV, OKAMOTO, HIGASHINADA-KU,
KOBE 658, JPN**JAPAN
JOURNAL: Clinical Chemistry 32 (8): p1464-1467 1986
ISSN: 0009-9147
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: For fluorometry of **\$\$\$selenium\$\$\$** in human blood, hair, and liver and in leaves, we wet-ashed the samples with conventional nitric and perchloric acids, and then extracted **piaszelenol** (complex of Se and 2,3-diaminonaphthalene) in cyclohexane. **\$\$\$Selenium\$\$\$** was back-extracted from the cyclohexane into nitric acid to remove the fluorometric interferences of trace amounts of organic compounds. This fluorometric method is rapid and suitable for routine analysis. We applied the method to human hair samples and compare it with the data for non-destructive neutron activation analysis of the hair.

3/7/57

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0005172652 BIOSIS NO.: 198682019039
MERCURY **\$\$\$SELENIUM\$\$\$** CADMIUM AND ORGANOCHLORINES IN EGGS OF THREE
HAWAIIAN USA SEABIRD SPECIES
AUTHOR: OHLENDORF H M (Reprint); HARRISON C S
AUTHOR ADDRESS: PAC COAST FIELD STN, PATUXENT WILDL RES CENT, US FISH
WILDLIFE SERV, C/O WILDLIFE FISH BIOL, UNIV CALIF, DAVIS, CALIF 95616,
USA**USA
JOURNAL: Environmental Pollution Series B Chemical and Physical 11 (3): p
169-192 1986
ISSN: 0143-148X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Eggs of three representative species of seabirds (wedge-tailed shearwater *Puffinus pacificus*; red-footed booby *Sula sula*; and sooty tern *Sterna fuscata*) were collected in 1980 to determine differences in heavy metal, Se, and organochlorine residues among species nesting in the Hawaiian Archipelago and among the four nesting sites sampled (Oahu, French Frigate Shoals, Laysan, and Midway). Hg and Se were present in all eggs analysed, but Cd was not detected. Hg was usually highest in booby eggs, and there was a southeast-to-northwest trend toward higher concentrations in this species; booby eggs from Midway contained the highest mean concentration of Hg (0.36 $\mu\text{g g}^{-1}$, wet weight) Se consistently occurred at lowest concentrations in booby eggs. When Se and Hg concentrations were expressed as **\$\$\$nanomoles\$\$\$** per gram, Se constituted 94-96% of the combined total at each location for shearwater and tern eggs. In booby eggs, the proportion as Se declined significantly ($\alpha = 0.05$) from Oahu (93.4%) westward to Midway (85.9%). Although DDT occurred in most of the shearwater eggs from each site, it was not found in booby or tern eggs. DDE occurred in all eggs, but mean concentrations did not exceed 0.6 $\mu\text{g g}^{-1}$. DDE concentrations were higher in eggs from the two south-eastern nesting sites and were consistently highest in shearwater eggs. PCBs were found in most of the shearwater and booby eggs, but were not detected in tern eggs. Other organochlorines usually occurred more frequently in eggs of shearwaters than in other species. The only exceptions were α -HCH and HCB, which occurred more frequently in booby eggs. Kepone, heptachlor epoxide, chlordane compounds, and toxaphene were not detected. Differences in residue concentrations seem to reflect differences in diets and seasonal movements of the birds, and perhaps other factors such as atmospheric and oceanic transport of chemicals and physiological differences among the species.

3/7/58

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0004617576 BIOSIS NO.: 198579036475
MICRO DRY ASHING FOR TRACE **SELENIUM** DETERMINATION IN ORGANIC MATRICES
AUTHOR: SCHOENBERGER E (Reprint); KASSOVICZ J; SHENHAR A
AUTHOR ADDRESS: NATL PHYS LAB ISR, HEB UNIV JERUSALEM, GIVAT-RAM, DANZINGER
BUILD A, JERUSALEM 91904, ISR**ISRAEL
JOURNAL: International Journal of Environmental Analytical Chemistry 18 (4)
): p227-236 1984
ISSN: 0306-7319
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: A specific sample treatment method was established for determination of **nanogram** levels of Se in microquantities of organic compounds. Se traces in a new pharmaceutical product was determined as a result of a laboratory scale synthesis, in an amount of several tens of milligrams. GFAAS [graphite furnace atomic absorption spectrometry] was chosen as an analysis method, due to its sensitivity and rapidity. Among the wet and dry methods for organic material digestion tried, the low temperature dry ashing using ashing aid was the only 1 which gave satisfactory recoveries of Se. Micro dry ashing was performed, using an ethanol solution of magnesium nitrate on samples spiked with **selenium** nitrate in the range 1-6 ng/mg at 450.degree. C for 2 h. The presence of magnesium nitrate and heating suppressed the atomization .apprx. 15-25%. Recoveries of Se varied as a function of the organic matrix: for polyaromate compounds (chrysene and fluoranthene) they were 90-103% and for oxygenated compounds (dimethoxybenzoic acid or phthalates) 23-50%, respectively. Another aspect of chemical interference by organic matrices and ways to overcome it were clarified.

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0004256179 BIOSIS NO.: 198477088090
THE ENGLISH WABIGOON RIVER ONTARIO CANADA SYSTEM 5. MERCURY AND **SELENIUM** BIO ACCUMULATION AS A FUNCTION OF AQUATIC PRIMARY PRODUCTIVITY
AUTHOR: RUDD J W M (Reprint); TURNER M A
AUTHOR ADDRESS: FRESHWATER INST, DEP FISHERIES AND OCEANS, 501 UNIV CRESCENT, WINNIPEG, MAN R3T 2N6**CANADA
JOURNAL: Canadian Journal of Fisheries and Aquatic Sciences 40 (12): p 2251-2259 1983
ISSN: 0706-652X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: An experiment was carried out in four 100 m3 in situ enclosures to determine the effect of primary production rate on Hg and Se concentrations of biota and to test the possibility of ameliorating Hg pollution problems by increasing ecosystem primary productivity. Two enclosures were controls. Primary productivity in a 3rd enclosure was increased 4-fold by addition of **NaNO3** and **NaH2PO4**. This stimulation was not sufficient to change pH although the growth rate of fish was enhanced. In this enclosure, Hg concentrations in pearl dace (*Semotilus margarita*) whole body and muscle samples increased 2- and 5-fold, respectively, exceeding the dilution of Hg by the enhanced growth rates. In the 4th enclosure, at the highest rate of nutrient addition, primary productivity was increased 9-fold, pH was elevated from .apprx. 7.9 to 9.2, and the growth rate of fish was stimulated. In this case, the elevation of pH retarded the rate of Hg bioaccumulation in comparison with the enclosure of intermediate productivity. Stimulation of primary productivity was not recommended as a Hg ameliorating procedure. Stimulation of primary productivity resulted in a general decrease in the concentration of Se in the aquatic food chain probably resulting from dilution of Se by enhanced growth rates of fish and other biota.

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0004205910 BIOSIS NO.: 198477037821
POLY BUTYL CYANO ACRYLATE NANNO PARTICLES FOR THE DELIVERY OF
SELENIUM-75 LABELED NORCHOLESTENOL
AUTHOR: KREUTER J (Reprint); MILLS S N; DAVIS S S; WILSON C G
AUTHOR ADDRESS: INSTITUTE OF PHARMACY, SWISS FEDERAL INSTITUTE OF
TECHNOLOGY, ZURICH, SWITZERLAND**SWITZERLAND
JOURNAL: International Journal of Pharmaceutics (Kidlington) 16 (1): p
105-114 1983
ISSN: 0378-5173
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Polybutylcyanoacrylate ***nanoparticles*** were used for the i.v.
and i.m. administration of a steroidal material ([75Se]norcholestenol) to
the rabbit. Whole body profiles of 75Se, obtained using a .gamma. camera
over a period of 30 days, show that the [75Se]norcholestenol is retained
for a longer period of time with the ***nanoparticle*** system than for
the control system where the drug was dissolved in a micellar system. In
vitro dialysis experiments indicate that the thermodynamic activity of
the drug can be increased by its incorporation within ***nanoparticles***
. This increased activity may affect the distribution of the drug into
body tissues.

3/7/61

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0003901329 BIOSIS NO.: 198375085272
FLUOROMETRIC DETERMINATION OF ***SELENIUM*** IN ***NANOGRAM*** AMOUNTS IN
BIOLOGICAL MATERIALS USING 2 3 DI AMINO NAPHTHALENE
AUTHOR: HASUNUMA R (Reprint); OGAWA T; KAWANISHI Y
AUTHOR ADDRESS: LAB BIOCHEMISTRY, SCH HYGIENIC SCI, KITASATO UNIV, 1-15,
KITASATO, SAGAMIHARA-SHI, KANAGAWA-KEN, 228, JAPAN**JAPAN
JOURNAL: Analytical Biochemistry 126 (2): p242-245 1982
ISSN: 0003-2697
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: ***Nanogram*** amounts of Se in biological material were
determined fluorometrically using 2,3-diaminonaphthalene after digestion
with nitric-perchloric acids. The linear relationship between
fluorescence and Se concentration held within 100 ng of Se, and the
experimental scattering was < 4% for a range from 5-25 ng of Se. A
recovery of 99 +/- 5% was achieved for 2.5 ng of Se preadded to tuna
muscle extract. The method is characterized by simple procedures and is
suited for small quantities of samples.

3/7/62

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0003431632 BIOSIS NO.: 198223005567
EVALUATION OF THE EXPRESSION OF URINARY ***SELENIUM*** LEVEL AS
NANOGRAM ***SELENIUM*** PER MILLIGRAM CREATININE AND THE USE OF
SINGLE VOID URINE AS A SAMPLE FOR URINARY ***SELENIUM*** DETERMINATION
AUTHOR: HOJO Y (Reprint)
AUTHOR ADDRESS: DEP FOOD SCI, FACULTY SCI, KYOTO PREFECTURAL UNIV,
SHIMOYAMA, KYOTO, 606, JAPAN**JAPAN
JOURNAL: Bulletin of Environmental Contamination and Toxicology 27 (2): p
213-220 1981
ISSN: 0007-4861

DOCUMENT TYPE: Article
RECORD TYPE: Citation
LANGUAGE: ENGLISH

3/7/63

DIALOG(R)File 5:Biosis Previews(R)
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0003294149 BIOSIS NO.: 198172028100
HYDROGEN SELENIDE EVOLUTION ELECTRO THERMAL ATOMIC ABSORPTION METHOD FOR
DETERMINING ***NANOGRAM*** LEVELS OF TOTAL ***SELENIUM***
AUTHOR: COX D H (Reprint); BIBB A E
AUTHOR ADDRESS: PUBLIC HEALTH SERVICE, CENTER FOR DISEASE CONTROL, TOXICOL
BRANCH, ATLANTA, GA 30333, USA**USA
JOURNAL: Journal of the Association of Official Analytical Chemists 64 (2
) : p265-270 1981
ISSN: 0004-5756
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: A H₂Se evolution-electrothermal atomic absorption method was described for determining ng concentrations of total Se in biological and environmental materials. A mixed acid digestion procedure was used to decompose organic material. NaBH₄, a redesigned hydride generator and an electric-heated absorption tube were used for H₂Se evolution and conversion to atomic Se. The method had a detection limit of 4 ng/ml and a sensitivity of 0.6 ng/ml and was linear from 0-90 ng Se/ml. As determined on urine, water and bovine liver, total and within-run precision had relative SD values of 5-17.2 and 5.5-12.6%, respectively. Accuracy was established with 2 NBS [USA-National Bureau of Standards] and 3 EPA [USA Environmental Protection Agency] reference materials and mean errors of 0 to +0.8 were obtained. Mean recoveries of 109 and 101% were obtained for 10 and 50 ng Se added to human urine.

3/7/64

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0002145325 BIOSIS NO.: 197763066181
CATHODIC STRIPPING VOLTAMMETRY OF ***NANOGRAM*** AMOUNTS OF ***SELENIUM***
IN BIOLOGICAL MATERIAL
AUTHOR: BLADES M W; DALZIEL J A; ELSON C M
JOURNAL: Journal of the Association of Official Analytical Chemists 59 (6
) : p1234-1239 1976
ISSN: 0004-5756
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: Unspecified

ABSTRACT: A method is described to determine Se in biological material, based on cathodic stripping voltammetry. Following wet ashing, the Se was extracted into benzene as the 3',4'-diaminophenylpiaselenol. The Se was subsequently back-extracted into dilute acid for analysis. Analyses of bovine liver demonstrated that the method was capable of recovering 96 +- 9% of the Se present. The detection limit and working range were 3 ng/g and 3-10,000 ng/g, respectively. The method was also applied to the determination of Se in rapeseed oils and seed. [Toxicity in humans and animals and analysis in plants and foodstuffs are discussed.]

3/7/65

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0001600009 BIOSIS NO.: 197559006152
TRACE ANALYSIS BY MICROWAVE EXCITATION OF SEALED SAMPLES PART 3
DETERMINATION OF 0.005-25 ***NANOGRAMS*** OF TELLURIUM AND 0.25-25
NANOGRAMS OF ***SELENIUM*** IN 0.5 MILLILITERS OF AQUEOUS SOLUTION